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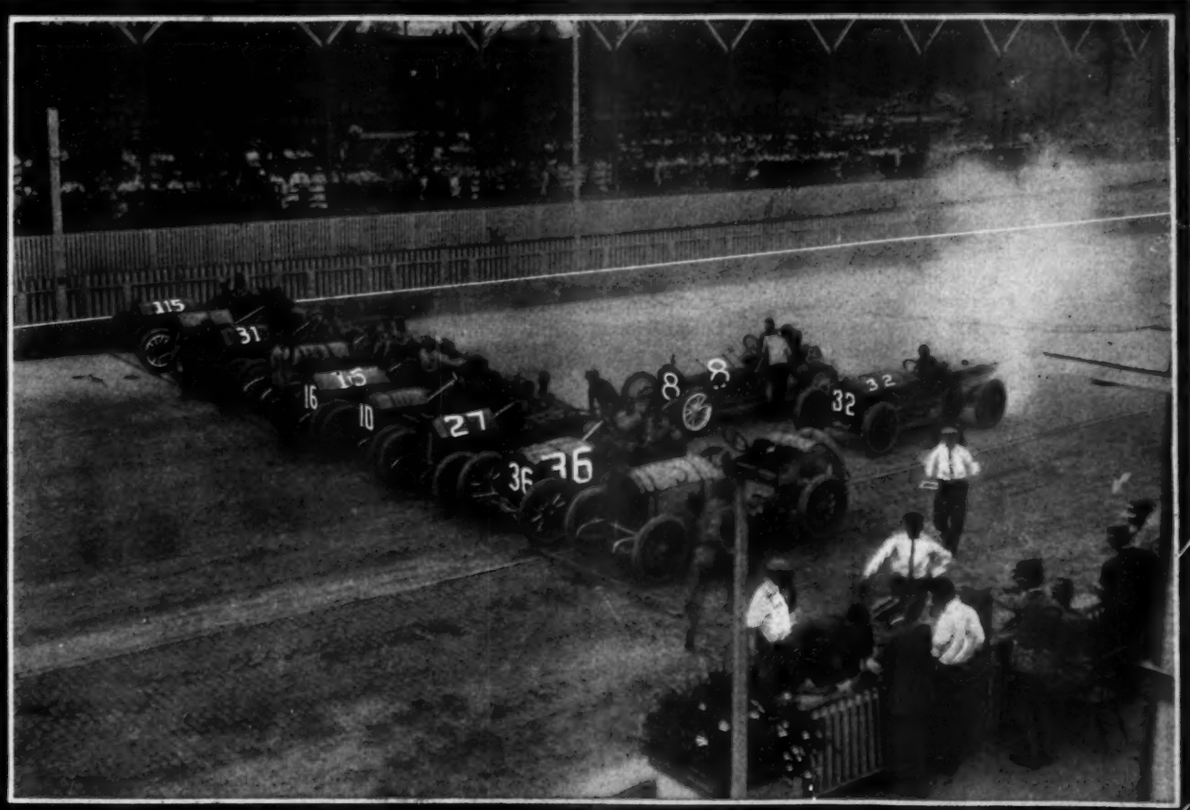
THE AUTOMOBILE

Labor Day Events at Indianapolis

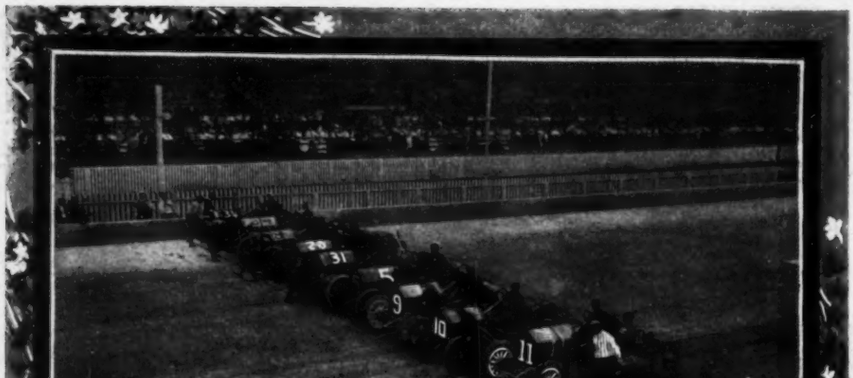


INDIANAPOLIS, IND., Sept. 3—Although no records were broken in the first day's races of the two-day meet which marked the closing of motor car competition at the Indianapolis Speedway for the season of 1910, considerable interest was shown and some remarkable performances were made in the two 100-mile events in which the Benz and one of the Nationals were the shining lights.

The 100-mile free-for-all was won by Hearne in the big 200-horsepower Benz. The prizes in this event are $1,000 to the winner, $500 for second place, $200 for third and $100 for fourth. This event brought to light a dark horse—a new Indiana car, the Westcott, burst into the limelight by showing its heels to a classy field and finished second to the big Benz. The Benz's time for this event was 1 hour 19 minutes and 58.1 seconds, which is 25.1 seconds slower than the Marmon's National Speedway record. The Westcott crossed the tape 4 minutes behind the winning Benz, and National, No. 7, was third.

There were 11 starters in the Remy Grand Brassard event and the six cars that finished made non-stop runs. National No. 9 was first in this event with National No. 11 second, Speedwell third, Midland fourth, Black Crow fifth, McFarlan sixth.

In the time trials the nearest that the 200-horsepower Fiat could come to the record



Start of the Remy Brassard—National, Marmon, National, Speedwell, Firestone-Columbus, Black Crow, Midland, McFarlan, Cino

was a mile in 38:64 and 40:20 in the 90 horsepower machine of the same make. In event No. 2, a race between three Herreshoffs, Emmons was first and Smith second. The Cole 30 was winner of the third event, with the Staver and another Cole close contenders for second place. Marmon No. 26 won the laurels in event No. 4, but was close pressed by Falcar No. 15, while Falcar No. 16 was third. In the fifth event National No. 9 was the shining light with Marmon No. 10 second and National No. 18 third. National No. 9 was the bright star in the sixth event, second and third places going to National No. 18 and National No. 11, respectively. The Benz 120 made its first appearance in event No. 7, which it won easily, with National No. 7 second. Fiat No. 2 would have given the Benz a good run for the money in this race had it not been for stalling the motor at the tape at the start. The five-mile handicap event went to Cole No. 6, with the Matheson finishing second and the McFarlan third.

The Westcott's performance in the 100-mile free-for-all event is remarkable for the fact that not a single stop was made throughout the race. Driver Knight stopped for 24 seconds in the thirty-fourth lap to take on oil, and it is interesting to note that though he set the pace the entire distance his tires were in excellent condition at the end. Two stops were made by National No. 7, each of which consumed more than a minute and a half, the first being in the thirteenth lap on account of a blown-out right rear tire, and the second in the twenty-fifth lap for a right front tire and water. Similar tire trouble was encountered by Harroun, who was fourth, the changes being made in the eighteenth and thirty-fifth laps. Creditable performances were also made in this race by the little Falcars which had already competed in two previous events. Pierce lost about three minutes in the twenty-fifth lap repairing a broken ignition cable, and Galnow lost two minutes in the twelfth lap replacing a spark plug.

Joe Dawson in a Marmon, who drove the winner of this year's Cobe Trophy, led the field in the Remy Grand Brassard for many laps, and it was nip-and-tuck between him and National No. 9 until he suffered engine-bearing trouble and went out in the twenty-fifth lap. With the Marmon to the mat, the two Nationals had the race well in hand, though Clemens' Speedwell clung like a wolf on their trail until the very finish of the event.

Labor Day's Events

INDIANAPOLIS, Sept. 5—The powers that be were surely lenient to the crowds that thronged the Indianapolis Motor Speedway to witness the closing events of the season, for notwithstanding the fact that a heavy downpour of rain occurred shortly before the time for which the first event was scheduled, the weather soon cleared up and remained favorable throughout the afternoon leaving the track cool and in excellent condition, a fact which notably improved the wearing efficiency of the tires.

The 200-mile race for cars of 600 cubic inches piston displacement or less was the feature event of the day, and at 3:30 o'clock the twelve starters were sent away. The first prize in this race was $1,000, second $500 and third $200, and in addition to this the Bosch Magneto Company posted an extra $300 as a first prize, $200 for second and $100 for third. National No. 8 was the winner in this event with National No. 7 second, while McFarlan Six, No. 23, after getting first and fourth positions in two previous events and making the only non-stop run in the race, finished third. A threatening cloudburst so enveloped the track in darkness near the finish of this race that much difficulty was experienced by the starter and the timers in bringing it to a successful close. The race was continued, however, until a National No. 18 came in fourth. McFarlan No. 24 was on its last lap when the race was finished, while Black Crow No. 28 was also running on its seventy-eighth lap.

At 30 miles National No. 8, McFarlan No. 24 and Marmon No. 32 were fighting for the lead with the first named two lengths in front, while National No. 7

Line-up for the Class D, free-for-all—Marmon, National, Fiat, Benz, National

and Marmon No. 10 were having it out for fourth position. This is rather remarkable because National No. 8 lost almost a minute in the fourteenth lap replacing a right front tire. At 40, 50 and 60 miles Marmon No. 32 was in the lead and although it was necessary for it to stop at the end of the twenty-ninth lap it succeeded in establishing a new record for the distance of 75 miles, the time being 1:03:31.9 the previous record of 1:09:34.6 being held by a National and made on this track. This stop of 2 minutes 15 seconds, in which Marmon No. 32 took on gasoline and oil and changed a right rear tire, set it behind considerably, but at 100 miles it was again but a hundredth of a second behind the leader. From here on, however, National No. 8 held the lead and Marmon No. 32 was running second at 170 miles, after which it dropped out.

One of the most interesting events of the day was the 50-mile free-for-all open race which was won by the big German Benz of 120 horsepower. The Benz ran away from a field of eight starters in this event and in doing so annexed three records. At 15 miles it smashed the Indianapolis speedway record of 12:32:04 by making the distance in 11:22:02. The Atlanta speedway record of 15:31:80 for 20 miles was reduced to 15:06:52; and at 25 miles the National's Indianapolis record of 21:21:07 was shattered and replaced by a new one of 18:56:84. Among the starters in this race were the 200-horsepower Fiat, National No. 7, National No. 8, Matheson No. 14, Westcott No. 27, Firestone-Columbus No. 31 and Marmon No. 32, the prizes being $800 for first place, $400 for second and $200 for third. At the end of 10 miles the Benz led, having passed the Fiat after the first lap. The latter was running a close second, however, with Marmon No. 32 well up in third place, while both Nationals were trailing a mile behind. The Benz also held the lead at 20 miles though closely pressed by Marmon No. 32. The Fiat began to lose time in the seventh lap when it was compelled to stop for a rear tire change. The Benz practically had things its own way at 30 miles, the Fiat and Marmon No. 32 both being compelled to run into their pits during the eleventh lap and change tires. These stops enabled National No. 7 to climb into second place, while Marmon No. 32 was running third and the Fiat fourth. The Benz was almost a lap to the good at 40 miles though Marmon No. 32 had regained second place and Livingstone was running third. The Fiat suffered tire trouble again in the sixteenth lap. At the end of the race the Benz was still almost a lap in the lead while Marmon No. 32 was second, National No. 7 third and the Fiat fourth.

In event No. 7, a free-for-all open race of 10 miles, there were six starters. This event went to the 200-horsepower Fiat, which got away in the lead and at the end of the first lap was almost a hundred yards ahead of its nearest rival, the Benz, and although the Fiat maintained the leading position till the finish of the race the end of each lap showed the Benz about 25 yards closer, and at the finish of the race, which was most exciting, the German car was less than a length behind. Third position in this event went to National No. 11. Of the ten events on the program this afternoon the rest were for 5-mile distances and each was confined to a different class of cars.

Start of the 301-450 race—National, National, Speedwell, Midland, National, Firestone-Columbus

FIRST DAY'S SUMMARIES

One mile—Time trials (Record 35.68)—

No.	Car	Driver	Time
1	Fiat	De Palma	38.64
2	Fiat	De Palma	40.20

Five miles—160 cubic inches and less—

			2½ Miles	5 Miles
19	Herreshoff	Emmons	3:21.22	6:20.48
21	Herreshoff	Smith	3:24.71	6:21.19
20	Herreshoff	McCormick	4:01.35	8:04.80

Five miles—161 to 230 cubic inches—

6	Cole	Edmunds	2:31.28	5:05.50
17	Staver	Keifer	2:40.25	5:07.20
33	Cole	Endicott	2:51.21	5:07.79
35	Hudson		3:05.14	

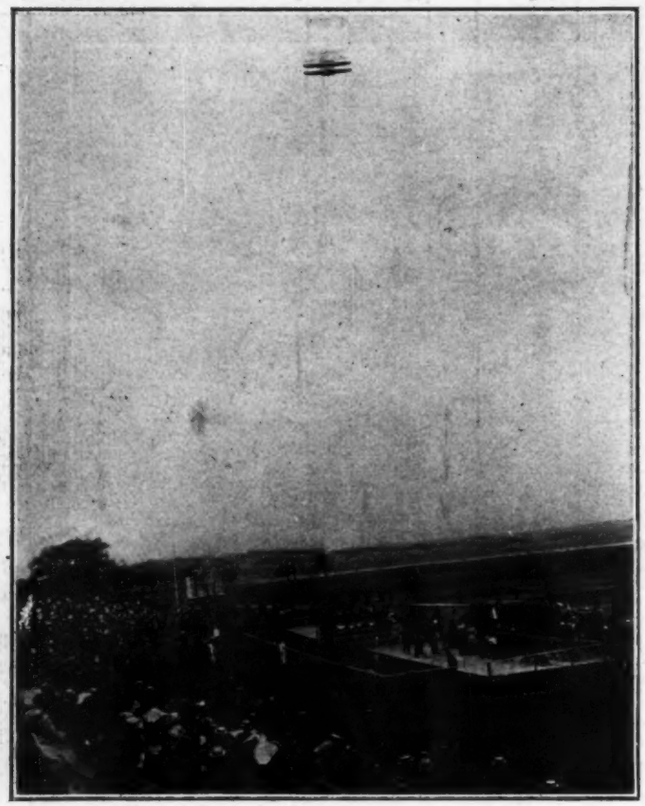
Five miles—451 to 600 cubic inches—

9	National	Wilcox	2:11.50	4:06.75
18	National	Greiner	2:12.31	4:07.51
11	National	Merz	2:16.57	4:18.10
14	Matheson	Basle	2:18.18	4:19.79

(*Continued on page 423*)

The 231-300 bunch under way—McFarlan, Falcar, Falcar, McFarlan, Parry, Marmon

Harvard-Boston Aero Meet

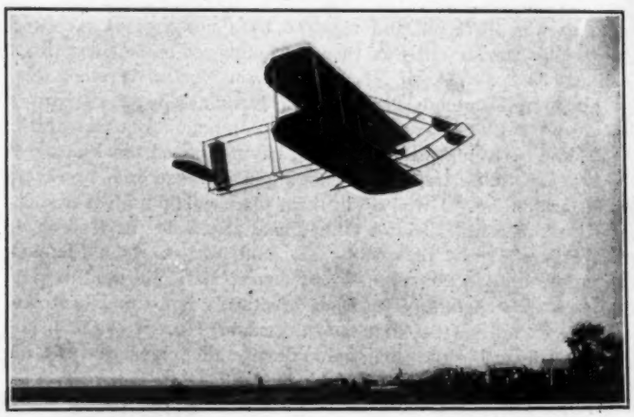


View of the ground and grandstand with Aviator Johnstone aloft in a Wright machine

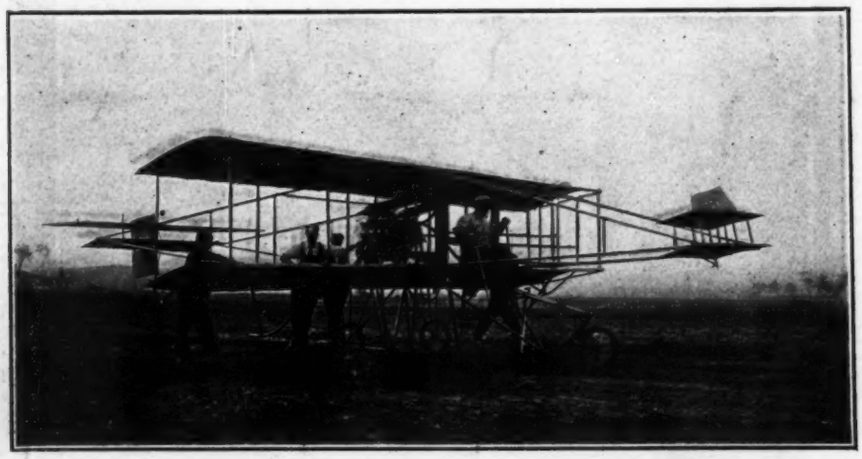
CAMPED in a salt marsh district known locally as Squantum and officially as Atlantic, Mass., the Harvard-Boston aviation meet was duly opened last Saturday to the accompaniment of a pattering rain and in the presence of a sea of umbrellas under which were heard the unflattering comments of Bostonians and strangers alike with regard to the poor provisions made for transporting a crowd of visitors to the flying grounds by rail or otherwise.

Among the aviators who had been billed to show the new art, the majority were mostly noted by their absence, but those who were there were the reliables whose ability to fly has been demonstrated over both sea and land, and, as in accordance with this fact, the aviation field stretched itself amphibiously from the grandstand toward the waters of Boston Bay, covering an uneven expanse of summer-dried marshland, studded with shallow tidal sinkholes and scalloped with patches of rank grass and sandy hummocks. The field in its soft unevenness offered a premium for machines and aviators capable of negotiating a quick getaway, at starting, whether by means of powerful motors or a friendly monorail starting device.

Claude Grahame-White, the noted English aviator who contested with Paulhan in the flight from London to Manchester, cut the impatience of spectators short as early as Friday, when many had congregated, by short decisive and rapid flights in his Blériot monoplane, not only inside the grounds but out over the ocean and making rises and swoops for the special delectation of the unpaid admissions grouped in the adjacent landscape, and on Saturday he was again the readiest starter and most willing exhibitor. Twenty yards of run in the tall grass was sufficient for sending his machine up, though the Gnome engine with which it is equipped is not of the 14-cylinder but the original 7-cylinder pattern. The most original wizard of aviation, Wilbur Wright, has been on the ground for several days and supervised the installation of quarters for his two fliers Ralph Johnstone and Walter Brookins, who took turns with the new "headless" biplane and a Wright biplane of the type shown many times before and practically the same which the Wrights had ready and tried out in 1905. Glenn H. Curtiss was present with the same machine which last Wednesday and Thursday he had flown from Cleveland to Sandusky and back again over Lake Erie, partly in a driving rain. It is of the rapid type, the planes having but slight curvature while the motor is of the eight-cylinder V-type and said to develop about 60 horsepower. Charles F. Willard had charge of another Curtiss machine, considerably smaller and provided with much more strongly curved planes and therefore better adapted for exhibition work but not for speed. A. V. Roe of England was ready with one of his triplanes, having two of these apparently cumbersome machines on the ground, but was handicapped in starting by the nature of the field, whose unevenness and softness were naturally unfavorable to the height and weight of his construction. Horace F. Kearney with a Pfitzner monoplane did not have good enough



The "headless" Wright flyer with rear elevating rudder

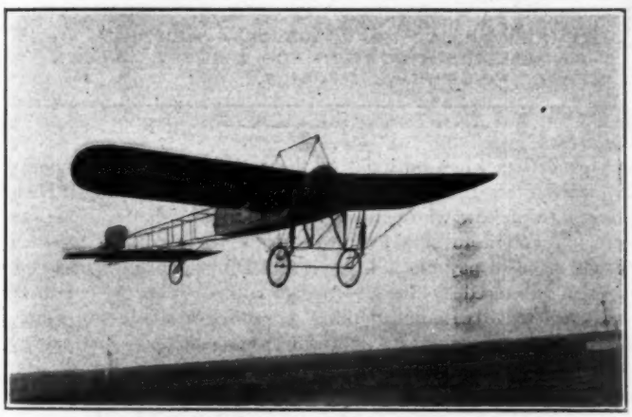


A Curtiss machine in which the ailerons have been moved back of main planes and with single elevating rudder

FLIERS OF ACKNOWLEDGED REPUTE BRAVE THE DIFFICULTIES OF A SOFT FIELD, RAIN, FOG AND OCEANWARD WINDS AT THE BIG AVIATION MEET

luck to get his machine ranked among the successful ones for the present. The indefatigable amateur Clifford B. Harmon was present with a Farman biplane provided with Gnome motor and a large gasoline tank, but suffered the misfortune of having his machine seriously wrecked in one of the first flights he undertook on the opening day. In trying to turn around one of the pylons or marking towers, before his machine had reached sufficient speed to permit this maneuver and only about fifty feet in the air, one end of his machine struck the ground, the aviator stating that the accident was due mostly to his own fault in judgment superinduced by the soft ground which interfered with his start, and by a gust of wind which caught underneath one side of the planes unexpectedly. While it had been this aviator's intention to go to St. Louis to give an exhibition, the accident changed this plan, and the machine was taken to the aeroplane factory of W. Stanley Burgess at Marblehead, Mass., for repairs.

A representative of the United States Navy was present to witness the bomb-throwing experiments for which arrangements had been made by placing an imitation man-of-war near the middle of the field and providing plaster of paris balls about 3 inches in diameter. From a height of 400 to 500 feet Grahame-White, carrying ten balls in a fisherman's creel beside his seat in the Blériot machine, succeeded in throwing one ball right into the central funnel rated as the bull's eye and another into one of the other smokestacks of the putative vessel, while most of the other balls hit near the vulnerable spots; and the naval representative shuddered at the destruction which would have been wrought.

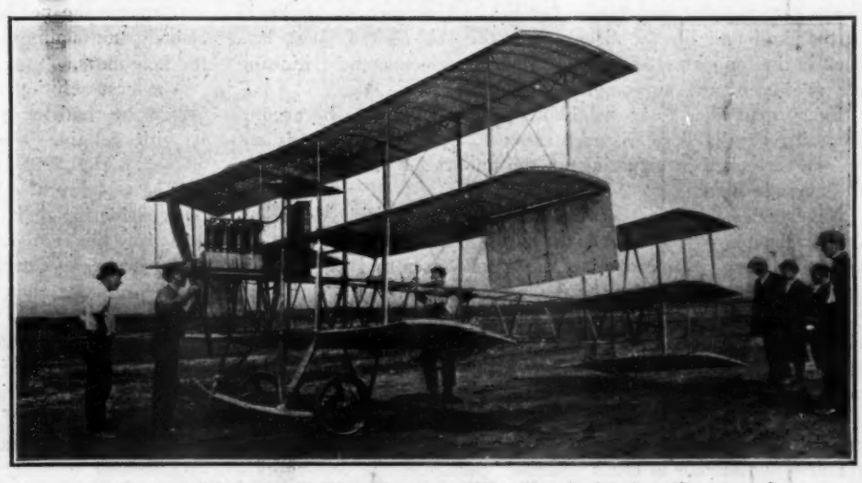


Grahame-White flying in his Blériot monoplane—the dummy man-of-war target for bomb-throwers to the extreme right

Sunday was officially a rest day, but a considerable number of visitors gained access to the ground and were rewarded by seeing Cromwell Dixon, a lad of sixteen and the youngest aeronaut of the age (though closely pressed by the aviator Marcel Hanriot, of France, a son of the well-known automobile racing man of the same name), attempt a flight with a small dirigble balloon and save himself from being carried out over the ocean only by the exercise of great presence of mind and a dexterity promising greater accomplishments in the future.

Start of a Farman machine which has been likened to "clothes on a line"

While all the aviators mentioned entertained the crowds worthily on Labor Day and Tuesday and made all the evolutions, swoops and dives in which the eye delights, no records were broken or created. On Tuesday a London fog made it impossible to see a machine more than 100 or 200 feet in any direction, including upward. The most interesting trials were those relating to the getaway or the length of the run on the ground required to make the machine rise. Grahame-White succeeded in rising with his Farman biplane, with a start of 66 feet, while the Curtiss machine required twice this distance. The big Curtiss flier is now equipped with "ailerons," or winglets, which extend to the rear of the main planes, so as to obtain a steering and balancing action which is not reduced and interfered with by having three planes.



Mr. Roe's triplane (British) which had difficulties in leaving the ground

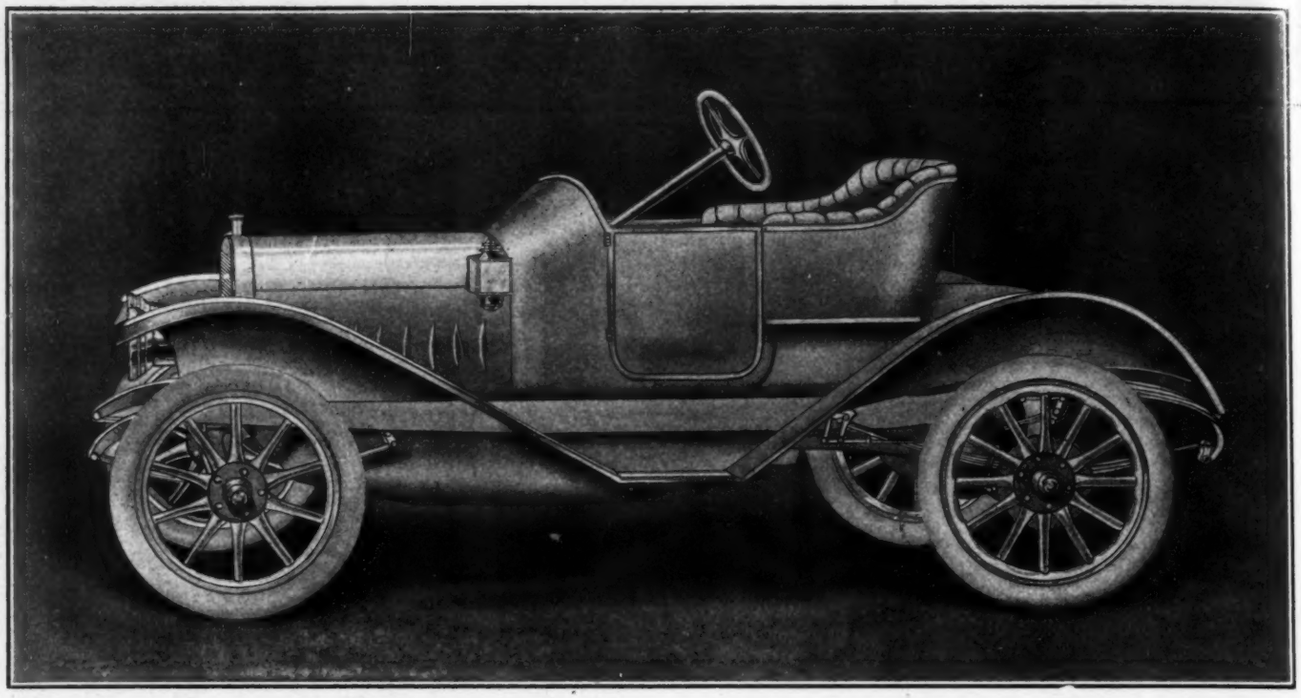


Fig. 1—Illustration of the convertible runabout body, showing fore-door construction and general appearance on a 100-inch wheelbase car

New Body Creation

PRESENTING GENERAL WORKING DRAWINGS OF A NEW IDEA IN BODY WORK SHOWING ACCOMMODATION FOR A GUEST. DRAWN BY GEORGE J. MERCER FOR THE AUTOMOBILE.

THOUSANDS of autoists have learned by experience that a tonneau adds very materially to the cost of maintenance of a car, due to the fact that empty seats in the tonneau constitute an invitation for additions to the party, and the disagreeable feature is entirely beyond the fact as represented in a more or less apt quotation, *i.e.*, "two is company and three is a crowd." It is almost impossible to evade taking the neighbors along; they suggest the idea every time they get a chance, not in so many words perhaps, but in a hundred ways both firm and convincing.

The added cost would not be a serious consideration were it confined merely to filling the tonneau occasionally, but it seems to be the misfortune of nearly every autoist to have to entertain guests every time the car is rolled out. The entertainment is in more ways than one, even the tire bill mounts up to enormous figures relatively, and one of the strange situations is portrayed in the fact that the owner of a car has to get down on his knees in the mud and fix the tires, while the self-invited guest lays back in the tonneau smoking the owner's perfectos, and criticising the quality of the automobile.

Every man likes to be neighborly; he is willing to be accommodating absolutely at his own expense, and self-sacrifice is not to be overlooked in summing up the qualities to be esteemed in the average man.

Nevertheless, it does seem as if neighbors quickly wear out their welcome, partly on account of their bad manners, to some extent in view of the large increase in expenses that attend their presence, and there is also the feeling that they think a man is as rich as Crœsus because he owns an automobile. There is small chance of accumulating even Crœsus' chicken-feed under the conditions represented by a tonneau and a perfectly willing set of neighbors.

This situation is much more serious than an outsider might realize. The pleasure that should attend the presence of a sweet running automobile is much dimmed, partly by the feeling that the owner has when he looks at the empty seats in his tonneau and encounters the longing gaze of his nearby friends. Then, there is the fellow who persists in coming along but who refuses every invitation to stop by the wayside for luncheon for fear he will have to pay the bill. It is bad enough to have one's enjoyment shattered by the presence of mixed company, but to be compelled to go without anything to eat for a whole day simply because the company has a tightwad in his makeup is past putting into good English.

There are two or three solutions to this problem, one of which is to have a family large enough to fill the tonneau; the second idea demands that one's neighbors be discouraged, but in the absence of a large family, the really right solution to the whole problem is to own an automobile with a body that is not inviting. Of course, one could attach an old-fashioned body to the car and shame the neighbors out of riding in it. This is a severe remedy and is almost as hard upon the owner as it would be upon the neighbors.

The best solution after all lies in the unconsummated future. When the roadster type of body came into vogue, autoists hailed it with delight. They said to themselves, "This is the right answer. The rumble seat is not sufficiently inviting and autoing will be a pleasurable undertaking." These autoists counted without considering their neighbors. The self-invited guest is not rebuffed by the prospect of sitting in the "monkey seat" at the rear. Most owners of cars have the impression that he would rather sit on the radiator than be debarred of the ride in someone else's car. Unfortunately, the average autoist has friends whom he would like to entertain, but he finally reaches a state of mind which prevents him from inviting his real friends to partake of his hospitality if it is in the form of holding down a monkey seat in the vicinity of the rear axle of a short wheelbase automobile. The rumble-seated body, therefore, fell short of the whole requirement by many yards.

Referring specifically to the large number of autoists who really cannot afford to run a big touring car day after day, when as a matter of fact they only need a runabout type of body, it remains to give them a convertible runabout body, if the same can be so designed that it will permit of inviting a friend along without feeling that the guest will be reduced to the status of a servant through force of the seat he is compelled to occupy in the car. To satisfy this exacting situation, it will tax the ingenuity of the best type of body designer, with the possible chance that the problem cannot be solved at all.

By way of a suggestion, a design is here presented that offers possibilities. Fig. 1 shows the body as it would appear on a Hudson car with a wheelbase of 100 inches, and all the other earmarks of comfortable touring. The general appearance of the body is in full accord with the latest ideas along torpedo lines with a fore-door and an overhanging cowl from the dash back for the protection of the occupants of the seat. The idea involved in drawing the body to fit some particular make of car is in order to show how it will appear in practice, but it will be understood that the body may be fitted to any automobile provided the dimensions are made to accord with the characteristics of the car.

Fig. 2 is a side elevation of the body showing the accommodation seat thrown back ready for the occupant. The seat proper, marked A, is formed out of the back of the main seat, and the lazy back for the accommodation seat marked C is formed by upholstering the underside of the trap door of the torpedo stern. The dotted lines show how the back of the seat proper swings back to form the accommodation seat and how the top trap door is swung up to form the lazy back of the accommodation seat. Fig. 3 is a plan of the body showing a main seat that is 36 inches across at the front edge, and which flares outward toward the back. The accommodation seat, which is 15 inches deep and 14 inches wide, is shown open, leaving a space 11 x 14 inches for the lower extremities of the occupants of the accommodation seat. Under all ordinary conditions, the accommodation seat is folded up, that is to say, the back of the seat proper is latched in its normal position, and the trap door of the torpedo stern is closed. The general appearance of the car, when the accommodation seat is folded up, is that of a smart torpedo-stern type of runabout fitted with fore-doors.

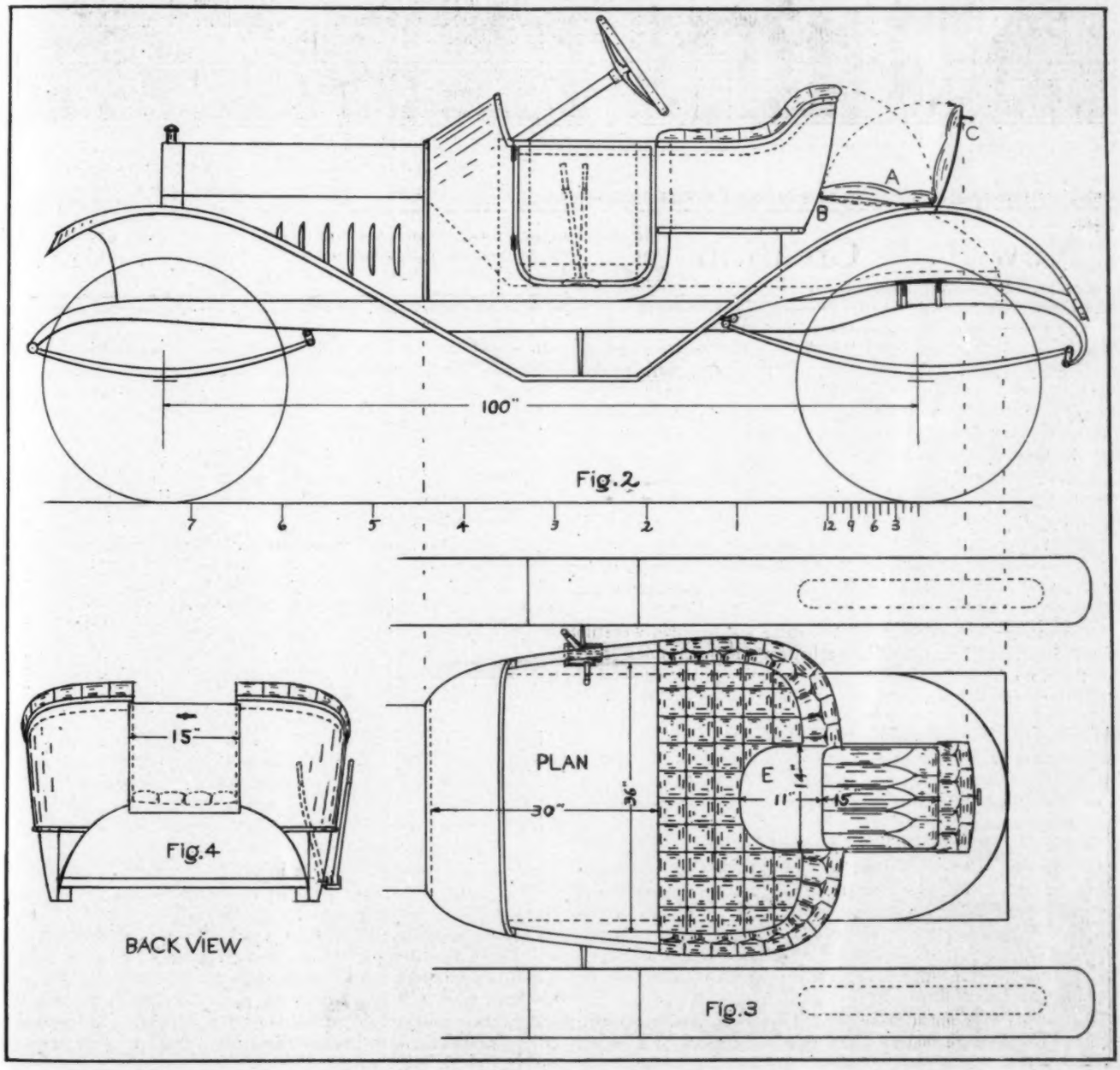
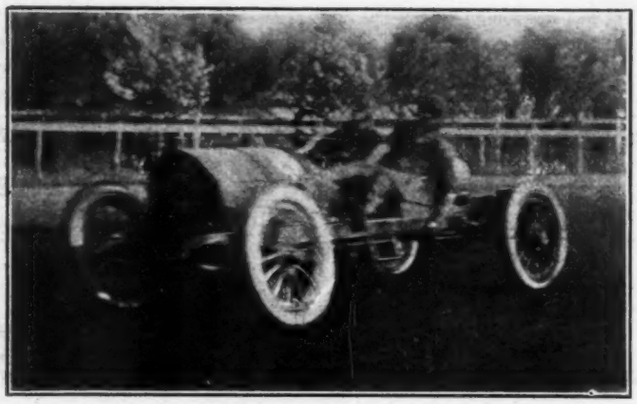
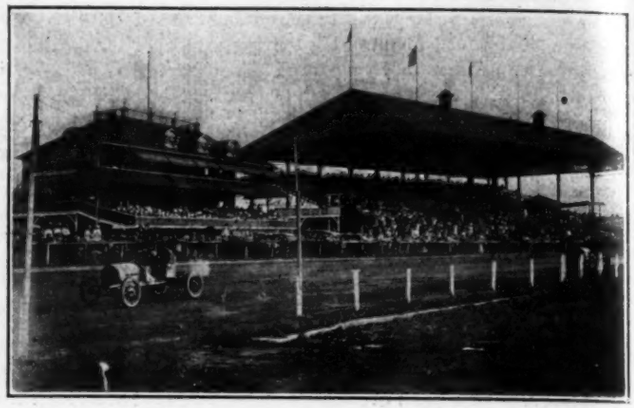


Fig. 2—Side elevation of the body, showing the third seat opened up; Fig. 3—Plan of the body, presenting the arrangement and method of opening up the extra seat



Mercer driven by Sherwood, third in the hour race



Allen-Kingston leading Simplex in the hour race

Brighton Beach Fizzle

ADVERTISED LABOR DAY SPEED CARNIVAL MADE A POOR SHOWING; EVENTS UNDER FIVE MILES IN VIOLATION OF RULE 78 OF THE CONTEST BOARD

PROBABLY 6000 persons paid $2.00 a head to sit in the grand stand and witness the Labor Day performance, which was advertised by the promoters as a speed carnival, the assumption being that Brighton Beach would be the scene of some of the greatest events that were ever heralded to take place at that Motordrome. It was a two-day affair, opening on Saturday at 2 P. M., skipping Sunday and reconvening on Labor Day at 11 A. M. The weather situation was distinctly bad on Saturday, rather indicating that Old Boreas had a hunch that the racing was not to be up to much—Boreas was right.

The first race was between the S. P. O. cars at five miles. The next was a ten-mile dash from the scratch, after which the first of the hour races was put on. In this race the Knox, while distinctly in the lead, had the misfortune to damage a valve at the thirty-ninth mile, which left the Simplex to win by itself. The splendid performance of the Knox up to the time of the accident proved to be one of the bright spots in an otherwise dull situation. By actual count just thirteen automobiles participated in the races. It was unfortunate that the big Benz was raced under unofficial conditions; it will be remembered that rule 78 of the Contest Board demands the use of automatic electric or mechanical timing equipment in all races under five miles. This equipment was not provided as after events proved.

The patrons, expecting to witness some good racing, were not much impressed by 13 cars and a battery of motorcycles—some of them, no doubt, had visions of the promises made on the billboards and in some newspapers. The summary of the event, which was really a Monday affair on account of bad weather on Saturday, is as follows:

SUMMARY OF THE EVENTS AT BRIGHTON BEACH

Event 1—Five miles; 300 cubic inches and under. Class E.

No.	Car	Driver	Time	Position
17	S. P. O.	M. P. Batts	5:16 2-5	1
23	S. P. O.	Jean Juhasz		2

Event 2—Mile time trials.

			First trial	Second	Third
2	Simplex	Robertson	53 3-5	52 2-5	
3	Darracq	Kerscher	53 2-5	52 4-5	
4	Simplex	Beardsley	1:00		
6	Black Crow	Otto F. Rost	1:15 2-5		
10	Isotta	Ray Howard	1:10	59 3-5	
19	Benz	Oldfield	50 2-5	50 4-5	49 4-5

Event 3—Ten miles for 600 cubic inches and under. Class E.

2	Simplex	Robertson	10:12 1-5	1
5	Fiat	Kerscher		2

Event 4—One hour race.

2	Simplex	Robertson	55 7-8 miles	1
5	Fiat	Kerscher	51 miles	2
10	Isotta	Howard	48 miles	3
4	Simplex	Beardsley	44 miles	4
6	Black Crow	Rost	44 miles	5
1	Knox	Oldfield	39 miles	6
7	Allen Kingston	Ormsby	25 miles	7

Event 5—Ten miles. Under 300 cubic inches. Class E.

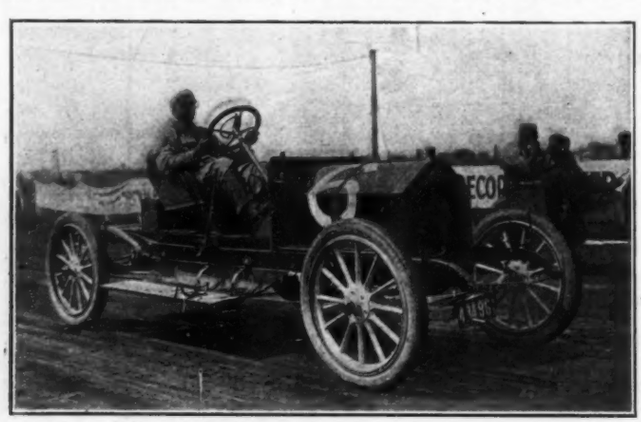
8	Mercer	E. H. Sherwood	10:46 4-5	1
17	S. P. O.	M. P. Batts		2

Event 6—Ten miles. Under 600 cubic inches. Class E.

2	Simplex	Robertson	10:08 1-5	2

Event 7—One hour race.

2	Simplex	Robertson	55 miles	1
7	Allen Kingston	Ormsby	48 miles	2
8	Mercer	Sherwood	35 miles	3
10	Isotta	Howard	No finish	



Black Crow driven by Rost, fifth in the hour race

Start of the hour race, won by Simplex, No. 2

Engineering Section

DEVOTED TO THE DISCUSSION OF ENGINEERING PHASES OF AUTOMOBILING, INCLUDING DESIGNING AND CONSTRUCTION FEATURES OF PRODUCTS, AND INFORMATION TO AUTOISTS

A PLACE FOR EVERYTHING AND EVERYTHING IN ITS PLACE—TAKEN AT THE MAXWELL SPARE PARTS BUILDING

REPAIRS have to be made sooner or later, no matter how good an automobile may be, and the pertinent question is, How much will the necessary parts cost and how long will it take to procure them from the maker of the particular car? If the parts are not carried in stock the time that will elapse between ordering and receiving will include the interval of making, after the manufacturer makes up his mind to stop regular work long enough to put a man on one small job. In this way it is more than likely that the cost of the repair parts will be very high to the maker, and if he fails to charge all the cost to the owner of the automobile he will suffer a pecuniary loss.

That any customer would be so lacking in acumen as to patronize a maker of automobiles who is losing money, is not believed. Lack of stability of an enterprise is a sure sign that the purchase price of the product is not the measure of the whole cost to the purchaser. The manufacture, under such conditions, is likely to be slighted. Repair parts, if they can be had at all, will be charged for according to the need for money of the maker; worth, that is to say intrinsic value, will have little or nothing to do with the transaction.

Legitimate prey, if the man who wants a repair part is to be regarded as such, is still entitled to a chance. What chance will he have from a maker who fails to include in his "wise" provision any means for taking care of his customers?

Among the makers of automobiles, taking the better class, it is the custom to run a repair department and to have a separate storeroom for spare parts. In this way if an order comes in for a repair part it is handled by "part number," and it is stored in a bin under that number, or according to a system that allows of promptly locating the part wanted so that it can be expressed to the customer the very day it is ordered.

If an automobile is worth anything to the user, it is a loss, in a pecuniary sense, to have the automobile placed out of commission during the time that it is undergoing repair. If that time is shortened by having the parts in stock at the plant of the maker, in this is a source of profit to the user of the car.

From the quality point of view it is not too much to venture that a car that is protected by repair parts in stock, awaiting instructions to ship, is considerably better than a car that is not backed up by a stock of spare parts, even if the builder of the latter does say that it never gets out of order and will never have to be repaired.

There is a superstition among many users of automobiles that it is cheaper to go to a machine shop and have parts made to order than it is to go to the maker of the car and purchase spare parts. It is even claimed that parts made to order are better than those regularly made—they ought to be, they cost so much more; but are they better?

It looks like a simple matter to whittle out a crankshaft from a billet of steel; surely a machinist will be able to do the work within a few hours; this is the reasoning. When the owner of a car undertakes to put this fine reasoning into force he licenses a repair shop to run up a bill that will be anything from $100 to $300, nor can he be sure that the crankshaft will be good for the purpose after it is made.

It is no different with a connecting rod, cylinder, piston, or even a bolt. The experience of a concern that is doing things daily in a large way is surely to be compared favorably with the experience of a man who has to undertake the work for the first time. Willingness to do a job at some one else's cost is not experience. Quality is not the companion of mere desire; experience is what counts.

The critic who from his pedestal on high says that a design or a part is not as good as it ought to be may be quite honest; the question is, who is his authority, or what is his ground for expressing his criticism? If a critic states that a part is not well made, and he offers to make a better one, it only remains to allow him to build a whole new automobile; what is the sense in placing so good a piece of work in so poor a frame? Why spoil the splendid job that he promises by using it under such disadvantages?

In the meantime it is not too much to say that it is a nice feeling to have, that comes with the assurance that spare parts can be obtained readily, and that the cost, even though it may seem a little high, is a known quantity and within the limit set by the importance of the undertaking as represented by the value of the service that the car will render when it is in good working order.

First Aid to the Injured

HUGO ERICHSEN, M.D., TELLS THE AUTOIST HOW TO TAKE CARE OF WOUNDS, FRACTURES, DISLOCATIONS, ETC., UNTIL THE DOCTOR ARRIVES

IT seems strange, when you come to think of it, that people carry an elaborate kit of tools, as a precaution against accidents to their machines, but usually make no provision whatsoever against mishaps to themselves. And yet timely aid is of the greatest importance in many such emergencies and even death may occasionally only be averted by a prompt stoppage of hemorrhage.

In considering automobile accidents there are practically only four forms of injuries with which we are here concerned, namely, bruises. wounds, fractures and dislocations.

For the proper treatment of these conditions, it is not necessary to carry an extensive outfit of medicaments and appliances, and the automobile medicine case may therefore be quite compact and take up but little space. I would suggest some mild antiseptic and disinfectant in a powdered form, such as formidine; a powerful hemostatic, such as adrenalin, the active principle of suprarenal glands; a small jar of moist sterilized gauze, some adhesive plaster, and a small collection of bandages of various sizes. To these it might also be advisable to add some remedy that will quiet pain, but this should only be administered when the suffering of the patient is almost unbearable.

Whisky is useful when collapse is threatened and the patient evidently requires stimulation, that is to say when the face is very pale and the extremities are cold. But the indiscriminate use of whisky, which is so common in all forms of accidents, cannot be too strongly condemned.

Contusions or bruises are often met with as a result of minor automobile accidents and are sometimes complicated by a hemorrhage under the skin. In the way of medication nothing can be done under such circumstances except to stop pain if it is excruciating. But the patient should be placed in a comfortable position until a physician arrives. At the same time all tight-fitting garments must be loosened, so that the circulation and respiration will not be interfered with. If the injured one looks pale or has fainted, it is also advisable to place him in such a position that his head will be lower than his heels. If the contusion is not of much consequence, the application of some analgesic ointment or balm, which is now purchasable in the convenient form of tubes, will afford the sufferer considerable relief.

Wounds are of more importance than contusions because they may involve a severance of one of the large arteries of the body and thus give rise to hemorrhage endangering life. If the wound is of small extent, the bleeding may be stopped effectively by the application of adrenalin or by exerting direct pressure upon it. In case one of the main arteries has been cut, however, which is apparent when the blood spurts from the wound, it is necessary to exert pressure at some point along the course of the artery between the site of the injury and the heart. This is best effected by what is called a tourniquet, a contrivance that can be easily improvised. If the wound is located just above the elbow, for instance, a handkerchief is tied around the upper third of the arm and a small block of wood, cork or smooth stone inserted between it and the skin directly over the artery, which can be readily detected by its pulsation. An iron rod or wooden stick is then introduced between the skin and the handkerchief, opposite to the block or stone and turned until the arm is constricted and the bleeding stops.

FIRST AID TO THE INJURED

Fig. 1—Emergency bandage; injured hand bandaged by means of handkerchief and placed in sling. Fig. 2—Shows application of improvised tourniquet. Fig. 3—Shows how parasols and umbrellas may be used for splints in case of fracture; held in place by three large handkerchiefs

Small wounds should be carefully cleansed by means of pure water and, after being dried with a clean cloth, dusted over with formidine or some other antiseptic powder. Everything that is brought into contact with them should be as clean as possible. They may then be covered with a layer of moist sterilized gauze and bandaged, remaining in this condition until the patient can receive proper medical attention. In the case of clean cuts, it may be advisable to bring the edges of the wound together with strips of adhesive plaster, which may be allowed to remain in place until the healing process is complete. Every particle of foreign matter must be removed, however, before a wound is treated in this manner, for if it is not, it will give trouble later on by causing inflammation and suppuration.

In transporting a wounded person to some locality in which he can receive medical aid, he should be disturbed as little as possible and carefully protected against the sun, the dust of the road and the attacks of insects.

Sometimes it is impracticable to expose the site of a hemorrhage by partially undressing the patient, in which case no time should be lost in ripping the clothing and getting down to the site of the trouble without delay. In many such instances prompt action is required in order to prevent a fatal issue, since a person may bleed to death in a very short time, if one of the largest arteries is severed.

A layman can distinguish between a fracture and a dislocation of a bone by the excessive motility of the injured part in the one case and its immovability in the other. Sometimes the altered shape of the limb will reveal the nature of the injury, but in other instances it may be necessary to remove the shoes and garments. In such cases no attempt should be made to pull them off. Instead they should be cut away by means of some sharp instrument, such as a knife or shears.

When a limb is dislocated or sprained, but little can be done except to keep it as quiet as possible until it can be restored to its normal condition or subjected to proper treatment by a physician.

In a case of fracture, however, much may be done to render the patient's condition more bearable by means of improvised splints, that keep the injured extremity at rest and prevent the broken ends of the bone from rubbing against each other. Canes, parasols or umbrellas, if they are at hand, may be used for this purpose. In the open field, away from any habitation, even the branches of trees may have to be resorted to.

Letters

DISCUSSING MATTERS OF INTEREST TO USERS OF AUTOMOBILES; RELATING EXPERIENCES OF SOME; RAISING QUESTIONS OF GENERAL VALUE; AFFORDING OPPORTUNITY TO THOSE WHO WISH TO CONTRIBUTE

What Is the Best Automobile for This Case?

Editor THE AUTOMOBILE:

[2,352]—If I am not taking too much of your valuable time I would like very much to have a little advice in regard to what kind of an automobile to buy and would thank you very much for an answer. I am hardly able to own one, but have the fever, and others around here are indulging in cars so that I want one, too. I live in the country and our roads are fair. Part of the roads are piked. A few are hilly and sandy. There are so many kinds of automobiles to be had around $1,000 to $1,200 that it is difficult to make up one's mind as to the one to select. Then, there are second-hand cars advertised that are said to be made over so that they are as good as new; what about them?

Custar, Ohio. U. E. L.

The editor of THE AUTOMOBILE begs the question, but the following may be of some relevance:

Wilkins—"Do you have trouble with that 'used' car that you purchased a while back?"

Bilkins—"Couldn't have more if it was a widow with eight children and I married it."

Permanent Magnets Are Not Hardened All Over

Editor THE AUTOMOBILE:

[2,353]—Please tell me if permanent magnets are hardened all over?

N. H. G.

Pottstown, Penn.

No. See Fig. 4; the parts that are hardened are indicated by lines; the hardening is confined to a portion near the ends of the magnets.

Electric Lighting Is Now Regular Equipment

Editor THE AUTOMOBILE:

[2,354]—I am about to purchase an automobile and would like to have you advise me as to the expediency of adapting electric lighting on the same, also, would you retain the acetylene system as an auxiliary to the electric system if the same is adapted?

PETER N. COMBS.

Altoona, Penn.

It would be a good idea to retain the acetylene system, and by following the plan as shown in Figs. 1 and 2, it will be possible to do so. As the illustration depicts, the electrical fixtures are applied to the acetylene lamps by means of lamp attachments that permit of using the electric lights with the lamp standing up in front of the burner, but if it becomes necessary to use acetylene, the lamps are folded down as in Fig. 2.

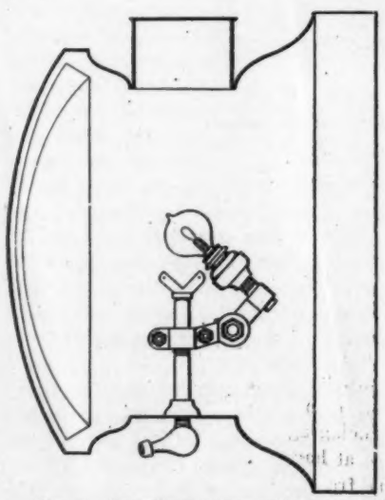


Fig. 1—Acetylene lamp with an electric lighting attachment; showing the same in position

Bevel Gear Steering Gears Are Not Irreversible

Editor THE AUTOMOBILE:

[2,355]—I have been told that bevel gear steering gears are irreversible; is this true? Please illustrate one and state why it is irreversible, if it is.

ADAM B. CONVERSE.

Erie, Penn.

No. The illustration Fig. 5, is of just such a gear, it being made of a 14-tooth pinion meshing with a 56-tooth gear; the ratio is therefore as 1 is to 4. Since the teeth are such that the gear will rotate with the same ease in either direction under a given amount of pressure, then there is nothing irreversible from this cause, and since the ratio is as 1 is to 4, it remains to be seen that it takes 4 times as much pressure for the pinion to drive the gear as it does for the gear to rotate the pinion; but there is nothing irreversible about a 4 to 1 ratio.

Would Like to Know Just How Wiring Is Insulated

Editor THE AUTOMOBILE:

[2,356]—Please illustrate the way that wire is wound on the kick-coil of an ignition system; this system, as I understand it, has but one winding of fine wire. What size of wire would you use?

ED. F. CALIGAN.

Racine, Wis.

The coil is shown in section in Fig. 3. The size of the wire may be No. 40 B. & S. gauge. It should be what is known as double-cotton covered magnet wire. The core should first be insulated by several wraps of oil-paper. Over the paper the wire is wound. In order to get 1-2 pound of wire on, it will be necessary to wind closely. The ends should have insulating washers; they can be made of red fiber or other suitable material.

Is Camphor Good for Cleaning Cylinders?

Editor THE AUTOMOBILE:

[2,357]—I have been informed that the addition of camphor to lubricating oil will lessen the accumulation of carbon in cylinders of gasoline engines.

As a subscriber to your paper, will you kindly inform me if this is correct and if the use of same would in any way harm the engine?

W. S. N.

New York City.

The Editor of THE AUTOMOBILE is not favorable to the plan; if some autoist can relate experience space will be given.

It is not necessary to confine discussion to camphor; other substances have relating properties.

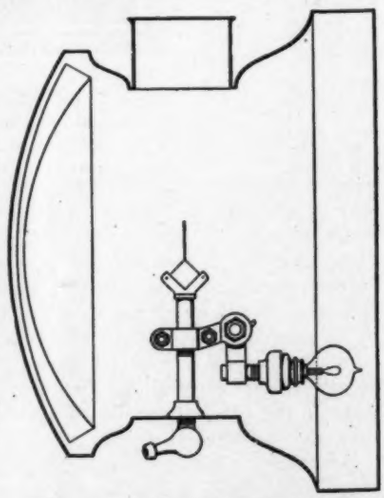


Fig. 2—Acetylene lamp fitted with an electric lighting attachment with the same thrown back out of the way

Just Why Is It Necessary to Change Gears?

Editor THE AUTOMOBILE:

[2,358]—As a new subscriber and also the new owner of an automobile I come to you with what may seem to you to be a simple case, but the fact remains that I am in trouble and what is equally to the point I do not understand just why I should be. Since my motor will go fast or slow accordingly as I manipulate the spark and throttle levers, why is it that I have to slide the gears, and why, too, do they make such a thundering clatter every time that I do undertake to slide them? Other autoists seem to get on very well; it is but rarely that some of them cause such a noise. Also, will the clatter that is made when I slide the gears do any damage?

NEW OWNER.

Newark, N. J.

The clatter that you cause, according to your own version of the performance, is due to the fact that you are not deft enough to so slide the gears that they will engage. Instead of engaging they rub against each other, and, considering the impact of the mass at the speed that they travel, it is to be expected that the ends of the teeth will be all battered up before long. Just how long it will take you to ruin the transmission depends upon the quality of the material of which the gears are made and the length of time that you take in learning how to manipulate the sliding-gear lever.

Just why it is necessary to employ a system of change gears in conjunction with an internal combustion motor would be a simple story to relate to one understanding graphics. By the use of graphics it is possible to plot two curves, one of which would

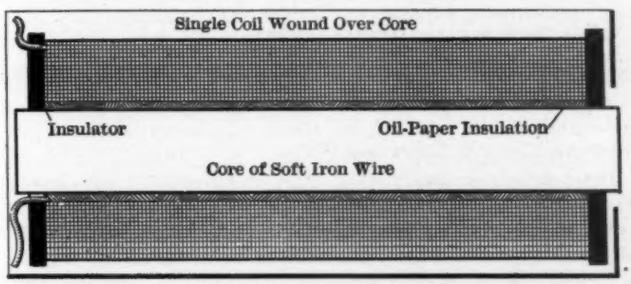


Fig. 3—Section of a kick-coil as used in starting a motor, showing how the windings are insulated

portray the power of the motor at its several speeds, and the other would indicate the power demanded to run the automobile at its several speeds. At all events it will be easy to understand that the power available from the motor at any speed at which it is being run must be equal to the power required to run the automobile at the speed that it is geared to run, or the motor will stall; that is to say, it will shut down.

The power that may be delivered from a motor is not the same at all of its speeds; in fine, the power increases with the speed. Unfortunately the power does not increase in direct proportion to speed, and after the speed is increased beyond a certain point, the power ceases to increase, but a point in the speed range is finally reached where there is an actual falling off.

Referring now to the power demanded to run the automobile, it is simple to understand that the faster the car is required to go, the more power it will take. But if the roads are soft more power will be required than when they are hard, and if the roads are hilly the power demanded going up hill will be more than when the car is traveling upon a level hard road, and the least power will be taken when the car is going down grade; if the grade is sufficient, that is to say, if the hill is steep enough, and the car is going down, the power may be cut off; it might even be necessary to apply the brakes.

Having thus recited the well-understood general conditions under which a motor is required to deliver its power, it remains to point out that the reason why the change gears are used is because the power needed to propel the car on a level hard road at high speed is not as much as that which is demanded to drive the car up hill, and when the hill is reached, in order to be able to go up, the motor is permitted to run fast, but by sliding into a lower gear, the car is geared to go up the hill slower. The result is that the power required to go up the hill is kept within the ability of the motor. Likewise, as the road condition demands, the gear ratio is adjusted to harmonize the relation of the motor to the demand; the variable being the speed of the car, as it must be, for the reason that it is not possible to either alter the road or make the motor deliver more power than it is capable of delivering.

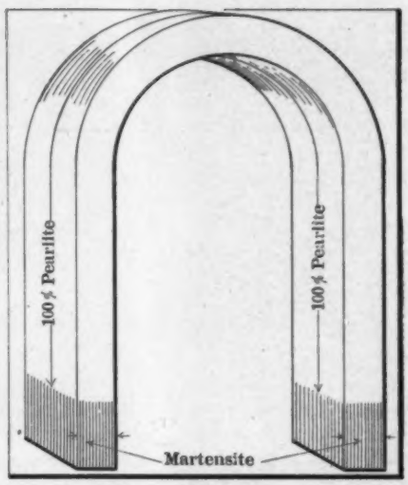


Fig. 4—Illustrating the hardened part of permanent magnets as used in magnetos

Referring to the question of sliding the gears with a view to eliminating the noise complained of, the points to be observed are as follows:

(A) Remember that the mating gears must be going at a common speed when they engage if noise is to be avoided.

(B) No two automobiles seem to act alike, and it is necessary for the driver to ascertain just how each car performs on the road and work accordingly.

(C) When the mating gears are rotating at substantially the same speed, deftly shift the gears. Deftness is half the battle. It is not an occasion on which languor will be enjoyed.

(D) How is the manipulator to know when the mating gears are rotating at a common speed? It is too bad that some rule can not be given for this.

(E) In dropping from a high to a low speed it is usually the case that a slight pause is all that is necessary before shifting.

(F) In changing from a low to a high speed the plan is to go up gradually. Accelerating the car is the process. If low gear is in, slide to second, then to third, and if there is a fourth, then go into it. Be deliberate—there is no occasion to act panicky.

(G) If, in attempting to slide the gears, it is found that they "refuse," back out, wait a second, then try again; don't linger.

(H) If the system is "selective," it is always possible to find some one of the selec-

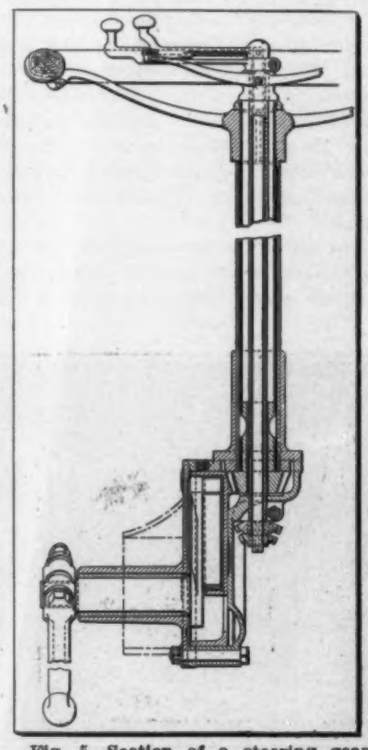


Fig. 5—Section of a steering gear showing the relations of a bevel gear and pinion for this service

tions that will work without clattering. Try to judge of the speed that the car is making; having decided as to this point, try to match up.

(I) It is also feasible to alter the speed of the motor so that the sliding can be accomplished without clashing; some designs of automobiles really indicate that changing the speed of the motor a little is a necessity.

(J) Bravery is worth more than any other one quality; timidity is the bane of the autoist; deliberate long enough to make sure of the ground, then go ahead—go at it like a whirlwind.

Wants to Know What Sizes of Wire to Use

Editor THE AUTOMOBILE:

[2,359]—I would like to make a single coil to use on my motor and having a high-tension distributer it is my purpose to build a coil that will be better than I would be likely to be able to purchase at any price that I can afford to pay. I have plenty of time at my disposal and understand electrical work sufficiently to make it possible for me to properly insulate the windings. I am somewhat at a loss to determine just what would be good sizes of wire to use and how much of each size, referring, of course, to the primary and secondary windings.

AMATEUR.

Philadelphia, Pa.

The first thing to take notice of is the space available for the windings. If this matter is so disposed of that choice may be taken, it is more than likely that the primary coil should be composed of 1-2 pound of No. 18 B. & S. gauge double-cotton covered magnet wire, and the secondary winding should be composed of 1-2 pound of No. 36 double-cotton covered magnet wire. Silk covering is better. If space permits use more than 1-2 pound of wire in each instance.

Motor Heats Up—Radiator Remains Stone Cold

Editor THE AUTOMOBILE:

[2,360]—I have a 2-cylinder, opposed, water-cooled motor, and while it has served me well for two years, it now shows signs of wear and I would like to have you tell me why the motor heats up and the radiator remains stone cold.

P. H. F.

Salt Lake City.

Since the radiator is placed to wipe the heat out of the water and the heat is put into the same at the cylinders of the motor, does it not stand to reason that, if the radiator remains cold, the water is not being circulated? What is it that is utilized to circulate the water in your case? Is there a water pump? If so, does it not stand to reason that it is shirking its plain duty? Have the pump repaired.

Mont Ventoux Hill Climb

BROUGHT THE LONG-STROKE SINGLE-CYLINDER MOTOR PERFORMANCE INTO BOLD RELIEF; ACCIDENT TO GASTE'S SIX-CYLINDER ROSSEL

AVIGNON, FRANCE, Aug. 29—An average of 37.6 miles an hour with a standing start up a winding hill measuring 13 1-2 miles, beginning with a grade of 6 per cent., increasing to 9, 10 and finally 13 per cent., can be considered satisfactory going even for a big racing car, but when the performance is accomplished by a little one-lunger of slightly less than 4 inches bore it is nothing less than astounding.

Nine years ago when the attempt was first made to capture the wild Mont Ventoux hill the mere ability to reach the top was considered remarkable. Automobiles have progressed some since 1902, as is proved by the fact that Boillot with his one-lunger Lion-Peugeot this year beat all comers by racing to the top in 21 minutes 30 2-5 seconds, getting very near the record established a year ago by a 155-millimeter, four-cylinder Brasier racing car.

The test is the high-water mark of hill-climbing, for starting at an altitude of 970 feet, the course rises in 13 1-2 miles to 6,216 feet, the grades being 2 1-2 miles at 6 per cent., 6 miles at 9 per cent., 4 miles at 10 per cent., and the remaining portion beginning at 10 and ending at 13 per cent.

This year's climb was marked by an accident which put Gaste's six-cylinder Rossel out of business almost at the commencement and made the victory easy for Boillot's Lion-Peugeot. While taking a sharp turn at nearly 60 miles an hour the Rossel skidded and went over into the ditch, with a broken arm for the driver.

The Lion-Peugeot which then took first place is the familiar single-cylinder racer of 3 9-10 by 10 inches bore and stroke, holding all world's records for its class. The motor was designed by Boudreau & Vernet, of Paris, and is remarkable, in addition to its long stroke, by the use of three intake and three exhaust valves.

In the same section second best time was made by the Spanish car Hispano-Suiza, having a four-cylinder motor of 2 1-2 by 7 4-5 inches bore and stroke. Piloted by Chassaigne, it was clocked in 22 minutes 31 2-5 seconds. Third place went to Giuppone on a

Fig. 1—Lion-Peugeot single-cylinder motor making sharp turn at 60 miles per hour or better

Fig. 2—One of the Hispano-Suiza cars on the turn just behind the Lion-Peugeot

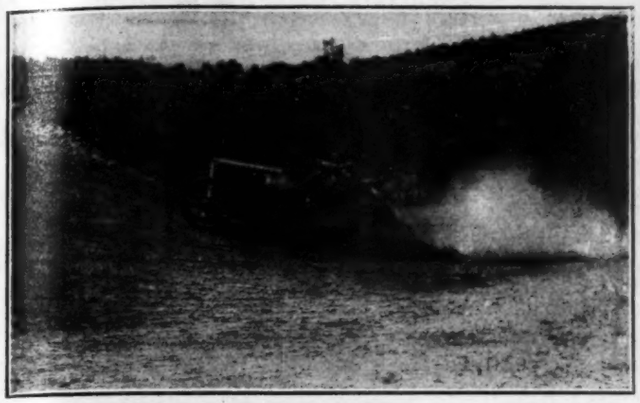


Fig. 3—Hispano-Suiza going like mad around the curve, trying to take first place—actually crossed the tape second

Fig. 4—Six-cylinder Rossel car just after the accident, which resulted in a fractured arm for Gaste, the pilot

one-lunger Lion-Peugeot identical with the winner, and fourth position to a Hispano-Suiza similar to the one which took second place. Ignoring all class distinctions, however, second best time was made by Zuccarelli's Hispano-Suiza of 3-3-10 bore by 6 1-2 inches bore. It was clocked in 21 minutes 56 1-5 seconds, or 25 3-5 seconds behind the winner. The following is the summarize result, which should be scanned with more than a little interest by the autoist recognizes the potential force of the argument in favor of fuel economy. It will be understood that the long-stroke single-cylinder motor was here in competition with even six-cylinder motors, which are not famous for fuel economy, and, while the larger motors probably delivered more power, the fact remains that they did not cover the whole distance finishing so quickly.

First Section

1. Boillot, Lion-Peugeot, 1 cylinder, 3 9-10 by 10 ins...21m. 30 2-5s.
2. Chassaigne, Hispano-Suiza, 4 cylinders, 2 1-2 by 7 4-5 ins.....22m. 31 2-5s.
3. Giuppone, Lion-Peugeot, 1 cylinder, 3 9-10 by 10 ins..24m. 2s.
4. Pilleverdie, Hispano-Suiza, 4 cylinders, 2 1-2 by 7 4-5 ins.....24m. 38 2-5s.

Second Section

1. Ducreau, Brasier, 4 cylinders, 2 7-10 by 4 7-10 ins...38m. 35 1-5s.
2. Bablot, Brasier, 4 cylinders, 2 7-10 by 4 7-10 ins.....39m. 6 2-5s.
3. Allgro, Brasier, 4 cylinders, 2 7-10 by 4 7-10 ins.....41m. 1 1-5s.

Fourth Section

1. Zuccarelli, Hispano-Suiza, 4 cylinders, 3 3-10 by 6 1-2 ins.....21m. 56 1-5s.
2. Meynet, Sigma, 4 cylinders, 3 3-10 by 4 1-12 ins.....30m. 5 3-5s.
3. Haubourdin, Tribet, 6 cylinders, 2 9-10 by 4 ins.....31m. 22 4-5s.

Eighth Section

1. Joerns, Opel, 4 cylinders, 4 1-2 by 6 9-10 ins.....23m. 13s.

Some Ultra-Refinements

DISCUSSION OF CARBURETER DESIGNING; HOW THE CRANKCASE MAY BE RENDERED IMMUNE FROM GRADE TROUBLE, ETC. BY PINGREE GROVE

SCANT attention is given to refinement in point of mechanical details, especially in accessory construction, and if the automobile, as a machine, is to ultimately stand on the same stable platform as the locomotive and other older machines, some of the engineers engaged in the work will have to take the time to point out the frailties and indicate the way to final success. It will be something of a task, to be sure, and the chances are that no one man will be able to do very much about it.

At all events, the sooner the work is started the better, and the less of it there will remain for other hands to do. It was only a few issues ago when it was stated, on page 275 of THE AUTOMOBILE, that "some rubber mixtures used in tires wear ten times as long as others." This was found to be so, according to the statement of P. Breuil, by tests that were actually made at the Conservatory for Arts and Sciences. Rubber was very aptly described as an organic material which has strayed into mechanics. It may be too much to state that rubber is not the only organic material that has strayed into mechanics, especially the mechanics of the automobile.

It is probably true that the tire problem is being wrestled with every day in the year, and, knowing its many complexities, it may be that it will be necessary to trust to the makers of tires to reduce a difference of ten to one down to a point where the sound of it will be somewhat less alarming.

Synthetic discussion, especially as it relates to the rubber problem, usually ends in words, but many of the remaining problems of the automobile are so well in hand that this character of discussion is not necessary. Take the carbureter problem for illustration. Why should there be so much talk on the side of undemonstrated theory? Its many angles are quite generally appreciated, and yet it is handled as a subject just as if it were a monoplane or some other really new contrivance.

Just to show that the carbureter problem will sustain discussion without departing from known quantities, let us take up the matter of the accumulation of water and the result of its presence in gasoline. Surely none will deny that gasoline is hungry for water; every dabbler in the chemistry of hydrocarbons will testify to the fact that pentane (chymogene) will coax water through a glass bottle with a ground-in stopper placed to prevent the water from passing through anything but the walls of the bottle. The hunger of hydrocarbons for water increases as the volatility of the product, and in proportion as it is anhydrous.

Automobile gasoline holds very little pentane or other hydrocarbon distillates lighter than hexane, but it is a gatherer of water to a greater or less extent in any event, and for good results in practice, the design of the equipment must be such as to enable the operator to eliminate the water. The design, on the other hand, should be such that it will not take the better part of an hour to find out what is the matter when a drop of water plugs up the orifice of the nozzle as shown in Fig. 2, which is a characteristic type of construction with an enlargement below the throat of the orifice. The globule of water is wedged in, having floated up in the stream, and it being too large to pass through the constricted passageway, and too tough to be torn asunder, lodges there and serves as a corking medium that will effectually stall the motor every time it happens.

What is the remedy for trouble such as this? Let us say it is best pictured when the water globule is not permitted to enter the carbureter. How is this to be done? Some say all the gasoline used should be poured through a chamois skin. If the skin is

first dampened by water it will not then let the gasoline through, but water will be free to pass. On the other hand, if the chamois skin is first soaked in gasoline, then it will refuse to pass water. But in these phenomena will be found the ground for suspecting that water is not likely to be kept out of the fuel system merely because the chamois skin is used to filter the gasoline. It is only a question of days when a more or less water-wet chamois skin will be used, and then the water, which is nearly always present in gasoline, will get by.

The best protection against water lies in a plan which controls the flow of the same and a means for separating it out of the gasoline before it reaches the constricted throat of the nozzle.

How is this to be done? Certainly not by assuming that all water is to be kept out of the carbureter. Even if it is possible by eternal vigilance to put nothing but unwatered gasoline into the tank, the first time the automobile is washed a little water will probably be forced into the carbureter by way of the float-bowl vent hole. But even if this is not likely to happen, the vent hole is there and the gasoline, being thirsty for water, will drink in some of its aquatic companion through the same vent hole.

If the gasoline is fed by gravitational force there will be still another vent hole somewhere in the system, through which water will creep. If the vent holes are not provided the gasoline will not flow, hence the remedy does not lie in the direction of sealing up the system.

In the further discussion of the problem Fig. 1 will be referred to for the purpose of elucidation. The gasoline enters at the top of the float bowl, and in this example an ante-chamber is provided. The orifice for the needle valve instead of being flush with the floor of the ante-chamber extends up to the roof. As the gasoline enters, then instead of passing down into the bowl below, assuming that the needle is off of the seat, it settles in the ante-chamber with the heavier portions laying on the floor, and the more volatile (lighter) portions will migrate toward the upper level.

The orifice leading to the seat of the needle valve instead of being quite open is constricted at the throat, and the wall is thinned down to a knife edge around the extremity. If water rises due to agitation it cannot enter the throat of the extremity of the passageway because the opening is too small, nor can the water lodge on the rim of the crater, due to the knife edge, which affords no lodging place. The result is that the globules of water, like marbles, will roll off of the rim when the carbureter is vibrated, and they being heavy will fall to the bottom of the ante-chamber. An outlet is provided near the bottom of the chamber, through which the water accumulations may be drained at intervals.

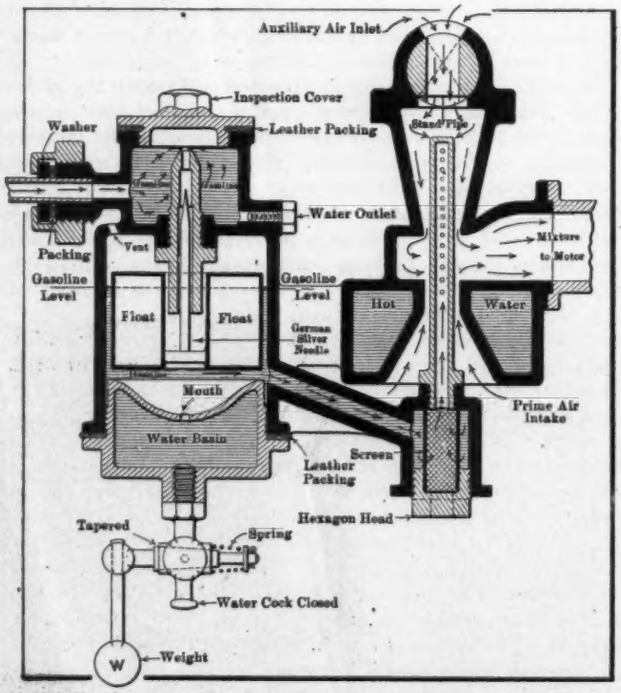


Fig. 1—Illustrating details of design of carbureters including means for disposing of water and other foreign matter

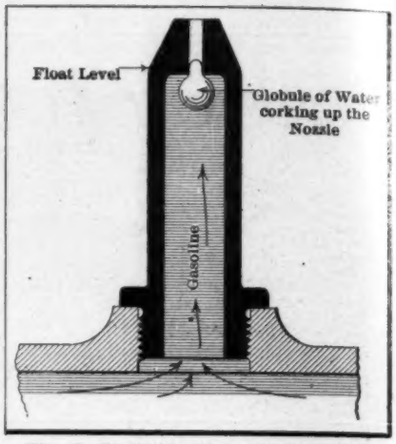


Fig. 2—Depicting the way by which a globule of water serves as a cork, preventing the gasoline from flowing out of the nozzle

But this precaution is of small avail in view of the presence of a vent hole for the float bowl. True, all the water that can find its way into the float bowl must be squirted in by the "washer" or be coaxed in by the anhydrous gasoline. To guard against water from these causes the bottom of the float bowl is provided with a water well formed out of the bottom cover by means of a core. This well is provided with a large mouth and at the low point a hole is drilled large enough to permit the globules of water to pass down into the well.

It must be remembered that if water will stop up the throat of a nozzle as shown in Fig. 2 it will stop up any other small hole so that care must be taken to have the hole leading to the well large enough to prevent the passage of water.

A cock is screwed into a threaded hole in the boss, formed in the bottom wall of the well. This cock is for the purpose of draining the water out of the well at rather frequent intervals; on this account the cock shown is so designed that it will work easy, but the handle is weighted and hangs down when the cock is closed. In addition to this the valve of the cock is tapered and a spring is placed on the reduced end in such a way as to put tension in the direction of forcing the tapered valve up against the tapered seat. A little lubricating oil, if placed on the seat, will hide in the pores of the metal and the valve will work easy at all times although it will be perfectly tight. The weighted handle will keep it from opening.

The rim around the mouth of the well will catch all the water and lead it down to the opening at the bottom so that only gasoline will flow from the float bowl to the filter at the bottom casting for the standpipe. The screen below the standpipe is there to pick up all the scum that may reside in the gasoline, it being in the form of water and other impurities. About once a week it will be found necessary to unscrew the screen and clean it off. It will choke up the passageway if this operation is neglected.

The screwed-in cover at the top is placed there to permit of opening up the ante-chamber and cleaning the same out from time to time. A leather packing-ring is used to make a tight joint when the cover is screwed in; the same kind of a joint is used to make a tight seam for the well, which also forms the bottom of the float bowl.

The waterjacket is limited to the walls that enclose the rich mixture; it is a well-appreciated fact that the liquid in the float bowl should be maintained at a constant temperature in order that the viscosity will be the same at all times. If the temperature of the liquid is not constant, then the amount of the same that will flow through the nozzle orifice will change.

In order to supply enough heat to vaporize the liquid gasoline the hot water is placed in the position of greatest advantage, *i. e.*, in a jacket concentric with the primary air intake and in juxtaposition to the primary nozzle.

The auxiliary air is not allowed to contact with the jacket walls; the cooler it is the better, provided the gasoline is vaporized before it is mingled in the stream of auxiliary air. As

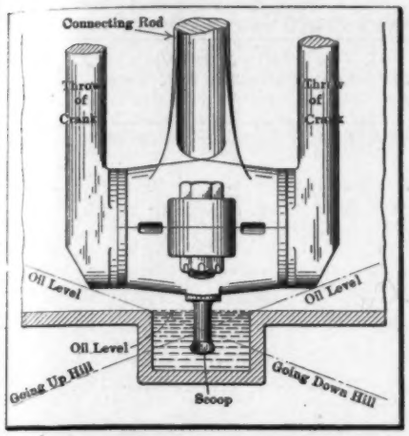


Fig. 3—Section of a crankcase showing how the scoop on the cap of the connecting-rod can be compelled to dip in the lubricating oil on a steep grade

for the remaining details of design, they are unimportant from the point of view of this discussion, and in the regular course all the ideas as here enumerated can be utilized without adapting the form of carbureter as here shown.

When a car is going up grade, or even when it is descending, the lubricating oil, instead of lying level on the bottom of the pan, surges to one end—the low point. What is the result? The crankpin bearings are starved. If the hill is a long one the bearings may run dry and the result will be that the "brasses" will be melted out, or, at least, the argument based on profuse lubrication will be without a leg to stand upon.

It is quite possible to so fashion the bottom half of the crankcase that this trouble will be aborted and Fig. 3 shows how the design may be carried out. In this illustration, which is a section through the bottom half of the case, the scoop on the boss of the cap is made long enough to dip into a trough, and the trough is so designed that the depth of oil is sufficient to prevent the end of the scoop from being uncovered when the car is going up or down hill and the oil runs to the low level. By means of broken lines the action is clearly indicated so that further discussion is uncalled for.

Strangle Well Located in the Intake Manifold

When a motor is running at high speed for a time, the flow of gasoline becomes substantially a stream out of the nozzle of the carbureter and if this flow is suddenly arrested as it will be if the motor is suddenly slowed down or brought to rest, some of the gasoline, due to inertia, will remain in the intake in liquid form and it will remain there long enough to strangle the motor the very next time an attempt is made to use the same. Even under running conditions it is possible for the liquid to pile up and when it does the performance of the motor will be irregular, if, indeed, it is not so bad as to demand drastic attention before much headway can be made. As a suggestion of a way to keep out of this character of trouble reference may be had to Fig. 4, which is a cross-section of the manifold at a point just above the carbureter joint. The extended portion is the strangle well; it is formed by a core during the casting process and the depression just in front of the baffle flange is for the purpose of allowing the liquid gasoline to roll down through the hole into the well below. When the liquid goes into the well it remains there until it is vaporized, when it comes up through the same hole as gas and is swept on to the motor. In this way the action is automatic, and the only time that it becomes necessary to unscrew the cap screw at the bottom of the well is when water accumulates; this should not happen under ordinary conditions of operation.

Motor Serves as a Good Brake on a Grade

It does not take a motorist very long to discover that it is at the price of brake linings that he uses these necessary devices on long down-hill runs at frequent intervals. Many autoists have contracted the habit of allowing the motor to serve in the capacity of a kinetic brake, and how well it will work in this capacity depends upon the design and the manner of its installation.

When a planetary gear is a part of the equipment, by throwing the same into low gear it is possible to go down almost the steepest hill without using the brakes; it is not bad practice to do so and if the hill is a little too steep all that is necessary is to put a little pressure on the brakes to aid the low gear and the descent will be made in comfort and safety.

When a sliding gear system is used instead of a planetary gear, it is just possible that the drag will be below the demand if the hill is steep, and in such cases it is possible that the plan as shown in Fig. 5 will ultimately prevail. This illustration is of a valve, the same to be placed in the intake at a point between the carbureter and the cylinders of the motor.

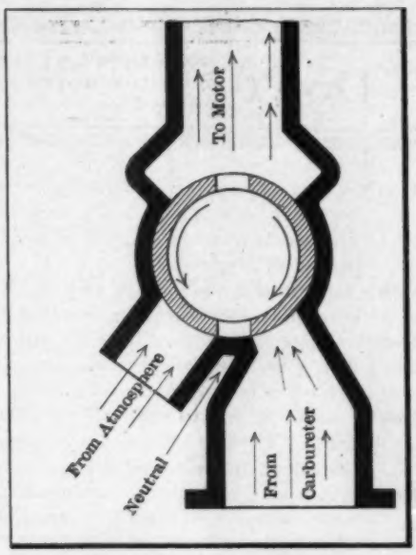


Fig. 5—Valve in the manifold just above the carbureter, placed there to permit of using the motor to slide down hill without using the brakes on the car

When the motor is running in the ordinary way the valve is turned so that the gates admit the mixture to the motor, but when it is desired to go down an ordinary hill the valve is turned so that the gate shuts off the mixture from the carbureter and admits fresh air only. If the hill is very steep the valve is turned to neutral, in which position the valve shuts off communication; the result is that the motor will pull a vacuum and quite an increase in the "drag" will result; in this way the car may be gradually maneuvered down a mountain side with scarcely a chance of having to call upon the brakes.

The fresh air swept into the combustion chambers of the cylinders will help to free the surfaces of any carbon residuum that may be lurking there, and the motor will land at the bottom of the hill clean and cool, ready for a long spurt and a quota of exacting work. A car that is fitted with good brakes and some means that will permit of sliding down hills on a kinetic basis is likely to be more safe to ride in, which is a point in the right direction, and the depreciation, as it is induced by brake-work, will sink to a low level. Even without any special provision, however, the motor may be used to advantage in retarding the motion of a car on a down grade, and the plan is recommended as being superior to the excessive use of the brakes.

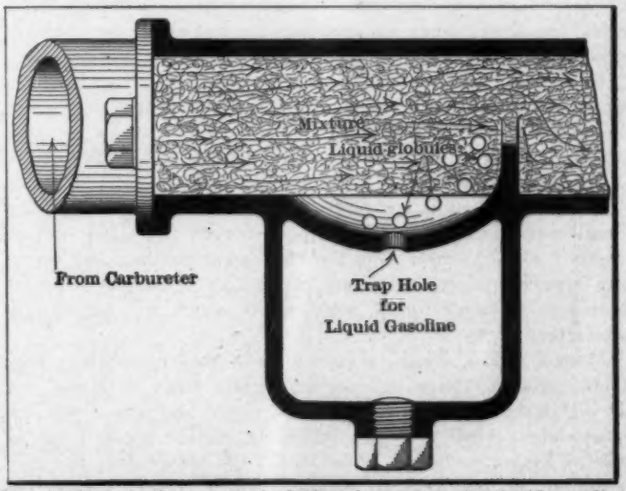


Fig. 4—Trap in the manifold, designed to catch the liquid gasoline and hold it there until it vaporizes, when it will be released

Don't

MORE SHORT-METER ADVICE TO THE TYRO—AND THE EXPERT—THE FOLLOWING OF WHICH MAY SAVE THE MOTORIST HEAPS OF TROUBLE, PERHAPS SOME MONEY, AND PROBABLY A LAWSUIT OR TWO

Don't imagine that color is so fast that it will not fade out if the automobile is stored in a dark room. To preserve the nice appearance of a car it is necessary to store it in a room that is well lighted.

Don't suppose that the varnish will not crack when it gets old; everything does, even the complexion.

Don't suppose that old age is at the bottom of all the cracking that is to be observed; some cars are so abused that the varnish is not all that cracks.

Don't wound a sensitive nature by coarse treatment; highly finished surfaces of bodies are most sensitive; like human characters of the sensitive class, they are easily wounded.

Don't allow soap and dirt to accumulate over the surfaces of bodies unless it is desired to change them to a mottled appearance.

Don't preach fresh air for human beings to the exclusion of the fresh air that will preserve the general good appearance of automobiles; it may appear funny, but while paint and varnish are devoid of the same character of lungs that supports man, they seem to breathe and are poisoned by impure air.

Don't fail to keep coal gas, carbonic acid and sewer products out of the garage; the varnish will mottle up on such feed.

Don't throw away your common sense when you take up with the automobile; there is occasional room to apply it.

Don't fail to add a little horse sense if the supply of the other kind runs out.

Don't imagine that all the "bronco busters" are dead; the way some automobiles are managed would suggest that the supply is inexhaustible.

Don't take two drinks on the ground that your system needs the stimulant, and then spill all your private affairs into the willing ear of the chauffeur—he may leak.

Don't believe all you hear about homes being mortgaged to buy automobiles; the fable tellers of that vintage are crying "sour grapes."

Don't tolerate short measure; you are entitled to every gallon of gasoline that you have to pay for; show the rascal up.

Don't let the repairman put a boy on a man's job; he may do more damage than he is worth; it would be better to pension him off and have done with it.

Don't purchase 10 cents' worth of supplies from a road-side repair shop and then tip the man a quarter; it makes it bad for people who know better than to breed such vermin.

Don't have your tools so handily placed that the light-fingered gentry that infest road houses will be able to relieve you of them.

Inexpensive Portable Garage

DESCRIPTION OF A FIRE-PROOF GARAGE, BASED UPON ACTUAL EXPERIENCE IN AN EFFORT TO SOLVE THE PROBLEM OF STORING A CAR

WITH the great majority of motor car owners, both present and prospective, the garage problem is one of much importance.

To house a car in a public garage involves a very considerable monthly expense; the care taken of the machine is not always satisfactory; and unless the garage is close at hand this arrangement usually presents some little inconvenience, and especially to those owners who operate their machines themselves. Moreover there are large and increasing numbers of autoists to whom the upkeep of their cars is a pleasant diversion, which together with the economies resulting from caring for their machines themselves, are denied when the machines are housed in the ordinary public garage.

On the other hand, to expend several hundred dollars in erecting a private garage even on one's own property is frequently objectionable and the average man hesitates still longer to make such an investment on rented ground which he may not desire to occupy permanently.

To meet this situation and provide an inexpensive private garage which can be moved readily if desired and which will be fireproof so as to meet even the most rigid building and insurance regulations, recourse may be had to corrugated iron or sheet iron in other forms, with results which will be entirely satisfactory.

Under a proper design, using standard stock materials, a substantial and attractive building sufficiently large to house one car and leave ample shop and work room, and which will accommodate a visiting car on occasions, can be secured for as little as $35.00, excluding labor, and if the owner does not care to himself do the work of erection, which is very simple, the whole finished garage, including labor, need not involve an investment of more than $50.00.

The floor plan of such a garage, in which is indicated the space occupied by a touring car of average length and the remaining shop and workroom space, is shown in Fig. 1, while in Fig. 2 the position of such a car and a roadster in addition is outlined. In this particular garage sheet iron, formed to represent rock-faced stone, was used for the sides, with regular corrugated iron for the roof. With drab paint on the sides and red paint on the roof it is difficult at a short distance to distinguish this building from one built of stone, with a red tile roof, and the whole appearance is very pleasing.

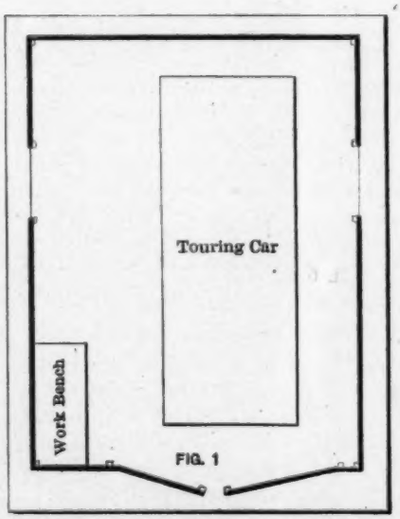


Fig. 1—Plan of the little garage showing the space utilized for the touring car and the working space around it

Fig. 3 shows front and side elevation—in addition to the plan. The more common V-roof would be somewhat simpler to frame and cover than the type shown which is selected because of its being more attractive in appearance. The right door is hung one foot from the corner, while two feet are left on the opposite side, where space is provided for the work bench.

The 9 feet of doorway provide ample clearance for the entrance of the machine, which is substantially 6 ft. wide over the running boards. One window on either side, located about two-thirds back, furnishes ample light and ventilation. The doors should each be 4 ft. 6 in. x 8 ft. high. The size of the windows should be made to suit the size of material used for the sides of the building.

The framing of the structure, which is made entirely of 2 x 4s in standard lengths, will be the same, irrespective of the material selected for the sides and roof. The following pieces of 2 x 4s will be required for the frame: For the uprights eight pieces 8 ft. long; for the horizontal members, four pieces 16 ft. long and four pieces 12 ft. long; for the roof, four pieces 12 ft. long. There will also be required for the stiffening of the roof frame eight pieces of 1 x 3-in. material, 8 ft. long. For the doors, 1 x 3 material will be required as follows: Four pieces 8 ft. long; four pieces 4 ft. 6 in. long; two pieces 12 ft. long.

To erect the frame of the building form a 12 x 16-ft. rectangle on the ground with two pieces 2 x 4s, 16 ft. long and two pieces 12 ft. long. Nail the corners securely with wire nails about 5 inches long, placing the four sills on edge. Then nail 8-ft. uprights inside each corner and nail to their tops a rectangle of two 16 ft. long and two 12 ft. long pieces similar to that formed by the sills. Two additional uprights are then to be placed on the sides, midway from the front to the rear, all as shown in Fig. 4. Two additional uprights are to be used for the hanging of the doors as shown in light lines.

The simplest siding is made of standard corrugated iron, in 8-ft. lengths, with 2 1-2-inch corrugations. If this material in 24 gauge galvanized costing about $4.40 per square (100 square feet) is used two pieces of 1 x 3-in. boards 16 ft. long and two pieces 12 ft. long will be required in the framing of the sides. These pieces are to be nailed to the sides of the 2 x 4 frame half way up or 4 ft. from the ground. The total cost of the corrugated iron for the sides will be about $20.00. For about 10 per cent. more sheet iron, stamped to represent rock-faced stone, can be secured. The strips of the latter run horizontally, however, instead of vertically and with them three nailing strips 1 x 3 in. will be required on each side, calling for six pieces 16 ft. long and six pieces 12 ft. long.

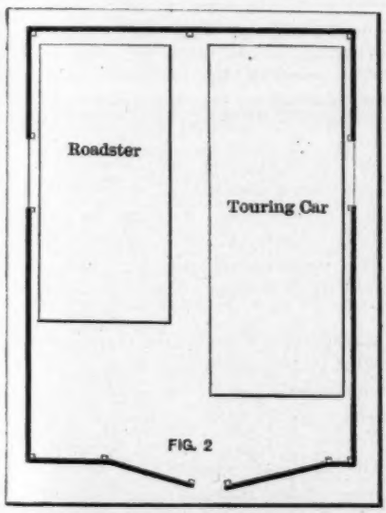


Fig. 2—Floor plan showing a roadster, and a touring car on the floor, and the room that is left.

With either character of siding the doors can be framed and covered conveniently, but with the rock-faced stone sheeting, which comes in lengths of 5 feet, it is simpler to make each door an even 5 ft. wide instead of 4 ft. 6 in. and this extra width of the doors will be found to be an advantage rather than a disadvantage in the use of the garage. Both kinds of siding are fastened to the frame with special wire nails and washers which are procurable with the sheet metal at a few cents a pound. About one pound of nails will be required for each 200 square feet of siding.

As respects the roof frame, if simplicity and ease of construction outweigh attractiveness the roof shown in Fig. 3 can be modified to a simple V roof for the framing of which six pieces of 2 x 4, 8 ft. long and one piece 18 ft. long will be required, together with two pieces of 1 x 3-in. material, 18 ft. long. The six pieces 8 ft. long run from the peak, which should be elevated 3 ft. to give good drainage to the eaves and provide for an overhang of the roof of about 8 inches, after the fitting at the peak is done. The 16 ft. 2 x 4 is the ridge or peak member and the 1 x 3 are nailing strips to be placed midway between the eaves and ridge.

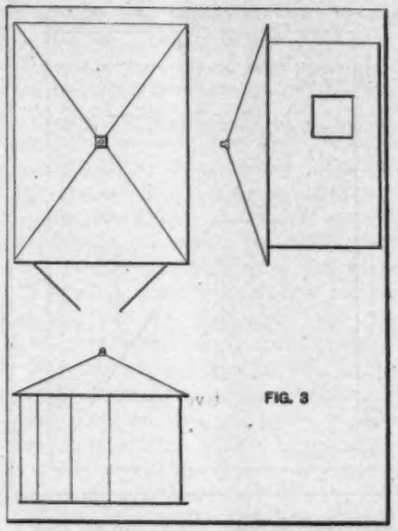


Fig. 3—Elevation, in two planes, also looking down upon the roof of the little garage

Galvanized corrugated iron is the best material for the roof, no matter what siding material is selected. It is to be bought in 8-ft. lengths also and nailed on directly to the roof frame. To make the ridge water-tight, a piece of ridge cap 18 ft. long will be required. This is standard material which can be secured with the other iron.

If such a roof as is shown in Fig. 3 is selected, four pieces of 2 x 4, 12 ft. long to run from the central peak, which is 3 ft. above the eaves at the center of the building, to the corners and to project 8 inches for the roof overhang will be required; and for nailing strips two pieces of 1 x 3, 8 ft. long and two pieces of the same material 6 ft. long will be necessary, these to be nailed to the main 2 x 4 frame midway between the peak and eaves. At the peak the 2 x 4s are to be sawed at an angle so as to make a ridge butt joint and opposite members are to be securely fastened together by nailing short 1 x 3 pieces on either side as shown by Fig. 6. The first two members can best be sawed and nailed together at the proper angle on the ground. This pair will then be placed in position and nailed at the corners of the building, when the remaining two members can be fitted and fastened in place.

With this character of roof some cutting of the iron, the 8-ft. lengths of which run from the peak down on each of the four sides, will be necessary, but the roof is designed to be symmetrical, and with reasonable care in cutting the 8-ft. lengths it will be found that only one cutting of each piece will be necessary and that each part will exactly fit at its proper place, so that there will be no waste of material and no extra fitting. This type of roof requires four pieces of ridge cap, 12 ft. long, also a peak ornament which is standard material, to make it water-tight and to give the roof a finished appearance.

In providing windows glazed sash about 24 x 30, as may best suit the width of the siding used, may be found in most lumber yards at from 50 to 75 cents each and may be easily arranged to run in simple slots nailed to the strips.

To provide a smooth and satisfactory floor a cheap concrete made of one part cement, four parts sand and six parts gravel or crushed rock or even cinders, may be employed, this floor costing about 5 cents per square foot; or a light board floor can be laid for a total

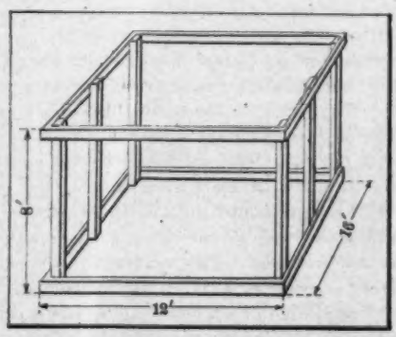


Fig. 4—A skeleton of the building, showing how the framing is joined

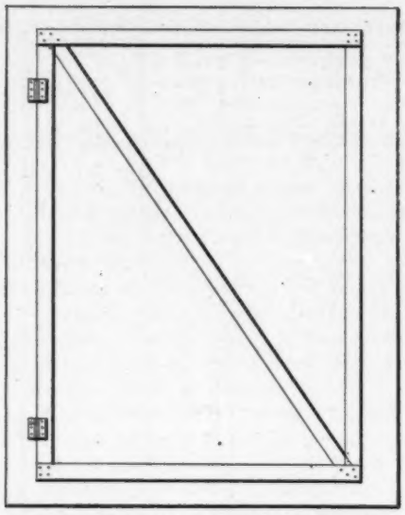


Fig. 5—Big door of the little garage, presenting the plan of the framing, showing the diagonal bracing to prevent the door from sagging

cost of about $10.00. For anything, except indefinite permanent use a couple of loads of cinders, costing about 50 cents delivered, will answer all requirements, providing the cinders are tamped firmly into the ground. This latter character of floor will be reasonably smooth and will absorb oil, water and other moisture, without disturbing the smoothness and without making any mud.

The doors are to be framed to the width selected about as shown in Fig. 5, which provides ample braces to keep the doors from sagging or getting out of shape.

With either construction of the sides or roof mentioned the work will be found to be simple and the results satisfactory. The problem of construction is well within the mechanical scope of any person having the slightest aptitude of mechanical plans and work and the finished appearance, in any case, will be pleasing, especially if the building is painted after completion as suggested.

If portability is desired it will be found entirely possible to dismantle the building at a future date and re-assemble it on another location, without any difficulty and without any loss of material except possibly a few nails, representing an outlay of a few cents.

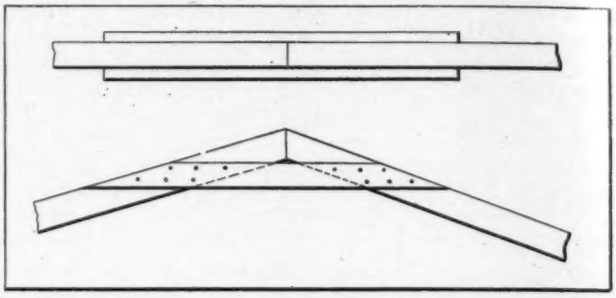


Fig. 6—Roof framing; a simple plan; as strong as it is easy to make

In putting up a building of this character it is well to remember that there are ordinances and insurance regulations that will have to be complied with. In some localities it is necessary to allow a certain distance between the residence and the garage.

Good Service from Dry Cells

JAMES S. MADISON SHOWS HOW A SATISFACTORY IGNITION SYSTEM MAY BE PROVIDED WITHOUT A MAGNETO

THIS article is intended for the autoist whose car is not equipped with a magneto or storage battery. All of the better class of cars are at present provided with magnetos, which give, without question, the most certain and satisfactory system of ignition; but there are many cars that depend upon dry cells as their principal or auxiliary source of electric current. Others are equipped with storage batteries; this is especially desirable in the case of cars provided with a coil that consumes an extravagant quantity of current. In view of the amount of time required to recharge a storage battery, the attention necessary, the inconvenience involved, and the very satisfactory service that may be obtained, by proper management, from dry cells, there does not seem to be any real reason why an automobile of the gasoline type should be equipped with a storage battery unless its coil is so wasteful as to render dry cells impracticable and its owner is willing to go to the expense of purchasing two storage batteries, so that one may be recharged while the other is in use. Of course, it would be simpler and wiser and not much more expensive to put in a new coil and magneto, or, what would be less expensive, a new coil and dry cells. The only way to determine accurately whether a coil is consuming too much current is to test it or have it tested with an accurate ammeter, the scale of which is divided into tenths—the small, low-priced pocket instruments will not do.

The test is made as follows: The wire, connecting the coil and battery, is disconnected from the battery, and the free terminal attached to the binding post of the ammeter; another wire is then connected to the free pole of the battery and the other binding post of the ammeter. The engine is then started and run at low speed. The reading of the ammeter will show the current consumption of the coil at that particular speed. Should the pointer of the ammeter move backward, interchange the two wires connected with the binding posts.

In no case should a coil consume more than 0.5 ampere under the above conditions; it should in most cases use not more than 0.2 or 0.3 ampere to insure economical service.

The writer recently tested the coils—one vibrating, the other non-vibrating—on two cars of different make (two-cylinder cars). In each case the coil consumption was the same, 0.2 ampere. With four and six-cylinder engines the consumption would be greater.

Assuming that the coil shows only a moderate consumption and that the owner is using dry cells without getting a satisfactory mileage, the fault undoubtedly lies in the method of installing the cells, and of taking care of them—a fault that may be easily corrected with gratifying results. While it is true that an occasional coil is defective, the vast majority of them are entirely reliable and free from faulty features. The vibrating coil is often condemned as consuming excessive current, when all that it needs is a simple adjustment of the vibrators.

In order to get the best results from a battery of dry cells, by cutting the cost of ignition per mile to the lowest possible figure, it is only necessary to observe certain simple precautions in buying and setting up the dry cells. But with the best coil on the market and the best battery, satisfactory results cannot be obtained if there are any poor connections. One single, unsuspected poor connection may cut down the battery efficiency 50 per cent.

More than half the battery troubles encountered by users of dry cells is due to ignorance or unwillingness to take a little trouble. If any one is skeptical on this point let him take a look into the battery boxes of a half a dozen automobiles.

There are a number of different kinds of dry cells on the market. Like other articles of commerce, some are good and some are not. For the protection of the consumer there should be stamped in clear letters, on the bottom of each cell, the date it was manufactured. This is of great assistance to the buyer, as it enables him at once to tell the age of the cell. Without the

stamp it is impossible even to guess how long the cells may have been standing around on the shelves or in some more objectionable place, unless the accumulation of dust and dirt on the outside should be an indication. One should, of course, test every cell purchased, whether it is dated or not, with an ammeter. Each cell of the usual size should show from 20 to 30 amperes; those reading above or below these figures should be avoided. If the car is equipped with a battery box by the manufacturer it will probably be of the right dimensions to accommodate the proper number of cells; if not it will be advisable to buy a metal box or have a wooden one made. For eight cells of the usual size, 2 1-2 by 6 inches, the dimensions of a wooden box are as follows: Inside measurements—length, 10 1-2 inches; width 6 inches; height 6 inches. It should be made of 1-2- or 7-16-inch boards, preferably of soft wood. There should be a partition 5 inches wide running lengthwise through the center to form two divisions, each of which will hold conveniently four cells. In addition there should be a strip of wood 11 1-2 inches long by 1 3-4 or 2 inches wide to go across the top lengthwise, provided with a screw at each end, for the purpose of holding the cells securely after they are in place. The bottom of the box is lined with one thickness of rubber matting or two thicknesses of Canton flannel or other soft thick material, in order to protect the bottom of the cells from the constant jolting. The cells should be prepared as follows: All the binding screws should be removed and the flat contact surface of each one brightened by rubbing it vigorously across a piece of fine sandpaper or emery cloth. The hexagonal nut on the carbon terminals of some old cells, which may be had for the asking at any dealer's, in case there are none at hand, should be removed and brightened on both sides in the same way, for use on the new cells. It sometimes happens that the terminals of unused cells are partially covered with pitch, or verdigris. This should be removed carefully and thoroughly. Emery cloth cut in strips about 1-4 inch wide, or, what is more convenient, "dental cloth finishing strips" (which are strips of linen covered with sand, that may be obtained from any dentists' supply house), should be used for cleaning and brightening these terminals. After the zinc poles (the small brass projection soldered to the rim of the zinc cylinder of the cell) of all the cells have been cleaned, screw on one of the hexagonal nuts. This is to provide a larger and more effective contact surface. This is an important detail and should not be neglected. The manufacturer provides a sufficiently large contact surface at the carbon pole, but only about one-half as much at the zinc pole. The nut should be screwed on firmly but quietly in order not to loosen the terminal. When all the cells have been treated in this way they are placed in the battery box. To prevent them rubbing against each other or the box, the interstices between the cells is filled by packing in firmly clean, dry, cotton waste or something similar. Small portions should be put in at a time and then packed down with a small rod or screw-driver. If this is done carefully, there will be left no space for any cell to move in—the box, cells and waste will form a solid, firm, compact mass in which there will be no motion of any of the individual parts.

The top strip of wood should then be placed in position, and the screws at each end started but not driven home. For connecting the cells together, the ordinary form of battery connections may be used. One of the most popular forms is slipped on the battery cell poles by a little pressure; it will remain in position indefinitely. This and other quickly adjustable varieties are satisfactory so far as putting them on is concerned, but the objection to most of them is that the contact surface is too small. The kind shown in Fig. 1 is very good. They may be purchased for 25c. per dozen and possess the very decided advantage of having copper terminals with large surface. The ordinary objection urged against them is that they are troublesome to put on and keep in place. This is only a valid objection if one is careless. They can be put on so securely, without any special effort, that they will not loosen during the life of the cell.

Fig. 1—Ordinary form of battery connection

Whatever form of connections is used, each terminal should be cleaned and brightened with emery or sandpaper. The cells should then be connected together in series or in series multiple, as one may prefer. No matter which method is used, the connections should be attached as follows: One end is placed against the hexagonal nut on the screw forming the carbon terminal, the round nut is screwed on with the fingers and then tightened firmly and carefully with a pair of pliers; the other end of the connection is attached to the zinc terminal of the adjoining cell in the same way, but greater care must be used to secure it, in order not to loosen the soldered joint between the brass screw and zinc cylinder. If the cells are to be connected in series, this operation is repeated until all are connected except the carbon and zinc poles of the last two cells. The carbon pole is then connected with the switch, and the zinc pole with the coil. Experiments have clearly demonstrated that while the connection in series is the most widely used, it is the most expensive and therefore unsatisfactory method of connecting dry cells. The series multiple connection is superior in every way, giving greater mileage at a lower cost.

The following table from "Operation of Motor Cars and Motor Boats," National Carbon Co., shows the comparative results of engine tests with multiple batteries:

Arrangement of Cells	Hours Service	Estimated Miles Service	Estimated Cost per 100 Miles
1 Set of 4 in Series	20	400	$0.25
2 Sets of 4 in Series-Multiple	70	1400	.15
3 Sets of 4 in Series-Multiple	120	2400	.11
4 Sets of 4 in Series-Multiple	170	3400	.08

These figures were obtained by practical tests in actual service with a four-cylinder, four-cycle automobile engine. In each case the battery was required to run day and night continuously until the engine began missing. This continuous service is the severest kind, because the batteries do not have a chance to rest. By using the same equipment and the same size batteries in service having periods of rest, the above figures will be greatly increased and the cost per 100 miles proportionately decreased. There is one other point; the joints should be electrically good; it is rarely that this is true; good joints will always be assured if they are soldered. The average man seems to think that a mechanically tight fastening of the wires to the terminals is all that the situation demands. The electrical resistance of one poor joint is far greater than the electrical resistance of perhaps a mile of wire. The energy, under such conditions, is dissipated at the joints, and the work that the battery will then do is very meager indeed. The time required to properly clean all the terminals and put a drop of solder on them, using a heated soldering iron for the purpose, is but slight. There are fluxes that come in paste form that will help out materially. The real secret of success lies in having the joints quite clean—emery-cloth is a good abrasive—bathe the parts in gasoline to remove every trace of grease. They go ahead.

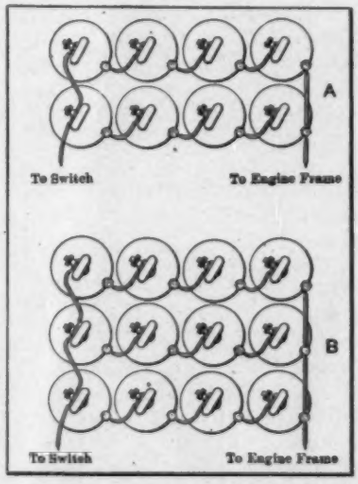


Fig. 2—Method of arranging dry cells when four are used in series; (A) Two sets in series-multiple; (B) Three sets in series-multiple

Repainting the Old Car

M. C. HILLICK TELLS THE AMATEUR HOW TO GO ABOUT THE TASK OF RENOVATING THE BATTERED BODY AND CHASSIS

SHORN of its surface beauty, with bruises and fractures sufficiently deep and numerous to make the work of bringing the car up to a finish a task of no mean importance, the first work consists in cleaning all parts of grease, dirt and miscellaneous accumulations. Then sandpaper the surface of the body with No. 1-2 paper, fetching it in this way smooth and sleek, with all fractures and defects cleaned out. In case of the metal body, scrape over all abrasions, dents and other disfigurements, and sandpaper the surface in the same manner as the wood surface is treated.

Beat up some tub or oil ground white lead in turpentine, adding a suitable coloring pigment, and adjusting it finally to carry, say, one part raw linseed oil to six parts turpentine. Apply this to the wood surface with a bristle brush and slick it up nicely to insure uniform and sure drying. For the metal body, first coat, use, for the most part, a negative pigment so far as its action on metal is concerned.

Make it to carry a strong percentage of raw linseed oil and apply to the surface sparingly but with a uniform film of pigment. Let this first coat of surfacer dry thoroughly, after which, this process completed, go over the surface carefully, and with a hard drying putty, fill up all cavities, and other defects. Any exceptionally rough places should be draw puttied, or putty glazed, as the work is variously designated.

The main thing in puttying, or in putty glazing, is to round up, fill up, and make the defects as little as possible, or, best of all, eliminate them altogether.

After 24 hours prepare and apply to the surface a coat of surfacer, or, as it is known to the trade, rough stuff. This can be shop-made or bought ready mixed, requiring, for immediate use, letting down with turpentine to a proper brushing consistency. This consistency, however, is a good bit heavier, or should be, than ordinary coats of paint. If made in the shop take equal parts, by weight, of any good American filler in dry form and white keg lead, working them up to a stiff paste in equal parts of couch japan and rubbing varnish, then thinning with turpentine to the desired consistency. On the whole, however, it is practically as cheap per gallon to buy the rough stuff prepared ready to use, and in this way you save the cost of mixing.

Apply four coats of the rough stuff in as many days, laying the first coat off lengthwise of the panels, second coat crosswise, so alternating in laying off, thus securing a more dense and compact body of pigment. Next take some of the rough stuff and add to it either enough yellow ochre or Indian red to give the pigment either a shade of yellow or red, and, thinning with turpentine, apply over the rough stuff. This serves as a guide coat to enable the painter, when rubbing the surface down with water and artificial pumice stone, or rubbing brick, to judge more quickly and accurately concerning the condition of the surface—when it has been rubbed enough, quality of rubbing, etc.

The day following this application of "stain" or "guide," rub the surface down to a smooth and level condition, free from all blemishes, with the artificial rubbing stone or brick, and water, using this latter medium plentifully. Rub with straight out and return strokes of the arm, holding the stone firmly upon the surface, and keeping enough water on the surface to prevent the stone from gumming up and scratching the work.

Circular motions of the stone during the rubbing process endanger the quality of the surface. After completing the rubbing process wash with clean water and stand the surface aside overnight for the elimination of moisture.

Next sandpaper the surface very lightly with No. 00 sandpaper, dust off and apply the desired color coat. With one coat of color and a coat of varnish-color, or with two straight coats of color, two coats of rubbing varnish, and a coat of finishing varnish the body surface should be sleek and trim and quite brilliant enough to give a good account of itself in any company.

Meanwhile, the chassis will require attention. After cleaning up thoroughly go over the parts carefully, and all fractured, and shattered, or lightly bruised places, touch up with a pigment composed of, say, three parts white keg lead and one part coloring pigment of any preferred shade, beating the mass up in turpentine containing raw linseed oil in the proportion of one part oil to four parts turpentine. After three days sandpaper the surface of the chassis throughout, and apply with a camel's hair brush a coat of either white lead and some other pigment, or other surfacer, whipped out to a smooth working consistency in turpentine, fortifying the mass with raw linseed oil in the proportion of one part oil to seven parts turpentine. Brush the pigment out clear and fine, and after forty-eight hours putty all surface defects of whatsoever nature with the hard drying putty previously described. Should any coarse patches of surface exist, thin some of the hard putty down with turpentine and glaze all such parts. Let the putty dry for a couple of days and then sandpaper, avoiding, meantime, cutting through the first coat of surfacer. Upon working the putty down to a perfect level with the general surface, clean and dust off carefully and apply a final coat of surfacer composed of white lead and some desired coloring pigment whipped out thin in turpentine, with a bit of raw linseed oil added, say, one part oil to ten parts turpentine, using a camel's hair brush to lay on the surfacer.

Lightly sandpaper this coat in due time and apply color, then varnish-color or glaze, stripe, and over a coat of clear rubbing varnish, finish.

The Badly Shattered and Worn Job

This is the sort of work which the painter dislikes, it being difficult, as a rule, to get a price sufficient to adequately compensate him for services rendered. The old paint is found scaling and flaking off and the surface shows numerous gouges and fractures. The first step consists of burning the old shaky, flaky finish entirely off, using a burning torch or lamp. These lamps use gasoline, and in case their employment renders insurance policies invalid, procure a small rubber tube of the required length, and equipped with the proper devices, one end with small burning point and the other with attachment for gas fixture, affix to the nearest gas fixture, and with this medium—nowise equal in power to gasoline, to be sure—proceed to burn the old, crispy garment of pigment from the surface. In doing this work heat the paint until it becomes soft, and then with a broad-blade, half-elastic scraping knife, held at an angle of about 45 degrees, push the point under the soft paint and lift the pigment from the surface, doing the work as cleanly as possible. After burning the old paint away, sandpaper thoroughly until a clean, solid wood foundation is secured. Then prime with either raw linseed oil and some pigment medium, or with some one of the numerous excellent patent primers. We thus have the badly battered and shattered surface fairly and rightly started toward a new and sound finish. It only remains to carry it through with the several processes provided for such work, which includes rough stuff, color, rubbing varnish, and so on.

It is rarely that the chassis has to be burned off. Simply cut all the running parts down hard and clean with coarse sandpaper, scraping the shattered places down with a steel scraper

until a sound, healthy surface condition is reached, after which, upon sandpapering, apply a coat of primer as advised for the body. Bring to a finish upon the order of procedure already detailed.

To Paint Without Burning Off.

With a steel scraper dig away all the scaly and shelly pigment, working down to the solid foundation. Dig out, and clean out the old cavities, after which prime with some reliable material, working the medium into all the holes and fractures. Next apply some second coat material made up of white lead, raw linseed oil, turpentine, and a coloring pigment. Let this coat dry firmly and then apply the following: Dry white lead, three parts; best bolted whiting, one part. Beat to a consistency which lets the pigment work freely from the point of the putty knife in equal parts of brown coach japan and rubbing varnish, letting the mass out a bit with a sprinkle of turpentine. Take a broad knife and plaster the putty over the surface solidly, drawing it out smooth and to a uniform depth under the edge of the knife. Obliterate and face up all inequalities. Permit the putty to harden up several days—four, at least—and then with a rubbing brick or stone dipped in raw linseed oil proceed to rub down the mass, working it out gradually to a smooth, level surface.

Glaze with this same putty and face up all the rough parts of the chassis and in due time bring the proper surface with sandpaper.

Let the body surface, after rubbing, stand 24 hours before applying the first coat of color. Further operations on both body and chassis are identical with those given in connection with painting and finishing them under the systems already described, and are all-sufficient to give about the worst possible looking surface an appearance of which almost any automobile owner may well be proud.

Compact Ignition System

DETAILS OF AN IMPROVED IGNITER A NOVEL FEATURE OF WHICH IS THE COMBINATION OF A SPARK COIL, DISTRIBUTOR AND CONTACT-MAKER IN A SINGLE UNIT

COMPACTNESS is not a virtue to be sneezed at in any of the automobile walks; there is a tendency to disregard this condition in ignition work and it leads to a certain discommoding complication that is more annoying than even more serious happenings, considering the bearing of the average autoist and the fact that electrical equipment is mysterious to him. The B. & S. ignition system, made by Briggs & Stratton Company, of Milwaukee, Wis., is worthy of discussion on the ground of compactness, and other features that lend facility to the plan.

The novel feature of this device is the combination of a spark coil, distributor and contact-maker in a single unit, the entire outfit being contained in a heat, moisture and dustproof metal case only 3 1-2 inches in diameter and 5 inches high.

A single non-vibrator coil is used for any number of cylinders; the coil is enclosed in a heat-proof composition case with bronze spindles at each end and revolves within the outer casing, forming its own distributor, the high tension current passing through segments in the hard rubber distributor block to the secondary terminals.

The circuit is closed and broken by means of a mechanical device, which at certain speeds is assisted in its operation by the magnetism of the spark coil.

The current furnished by six dry cells or a six-volt storage battery is utilized to produce a single spark of intense heat and volume to ignite each cylinder charge.

The igniter is designed to be mounted rigidly on the engine base or supported by a bracket provided for that purpose and the drive obtained from the shaft ordinarily provided for the timer or distributor. The top plate only is shifted for spark advance, therefore secondary wires are not disturbed. A ball and socket joint is provided for connection to spark advance lever, and the spark advance can be arranged to work from any side. The wiring is very simple, the high-tension wires leading directly from the igniter to the spark plugs and two wires from igniter to the switch, one wire from switch to battery.

The secondary terminals are screwed firmly into recesses in the distributor block, making it impossible to short-circuit the distributor with any amount of water. The cover of the igniter may be removed for inspection of contact maker without disturbing any of the wires and is also absolutely water-tight.

Three types of switches are furnished—one providing for two sets of batteries, another for battery and open circuit type of magneto and the third for battery and closed circuit type of magneto. All types are inclosed in a metal case and contain the condenser. Only the switch lever and the flange are exposed, the body of the switch extending directly through the dash, all connections being made at the rear. The lever may be operated either with the foot or by hand.

There are but two moving parts in the contact maker, which is one of the main features of the 1911 model of this igniter—the contact arm and a cam provided with a number of points corresponding to the number of cylinders to be used. In the accompanying illustrations, Figs. 1 and 2 illustrate the operation which up to this point is nothing more than a simple cam and lever contact maker. The lever *B* rests normally in the path of the cam *A*; this cam in its rotation engages the lever, causing the contact points *C* to be brought together, the points being separated by the spring attached to the lever *B* as the cam continues in its rotation.

The use of an entirely new principle in connection with the cam and lever contact maker has been made possible by the peculiar construction of this igniter—the breaker is made to provide a fixed duration of contact regardless of motor speed, and it is impossible for the motor to stop in such a position as to leave the circuit closed. Another feature is that the transformer coil itself is carried in the rotor of the igniter and is so placed that the core of coil rests directly in a vertical line with the cam of the contact maker. In Fig. 4 *H* represents the iron core of the transformer coil carried in the rotor of the igniter. The cam *A* is secured to the plunger *F*, which has a flat head, coming near to the core of the coil. The cam and plunger are so mounted in the driving spindle as to be free to slide up and down in the slots which serve as guides. They are, however, held against the upper

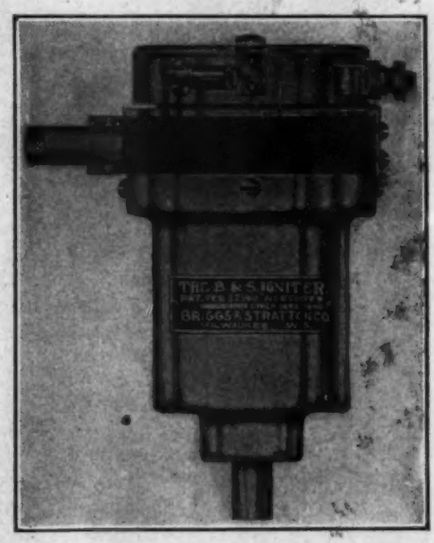
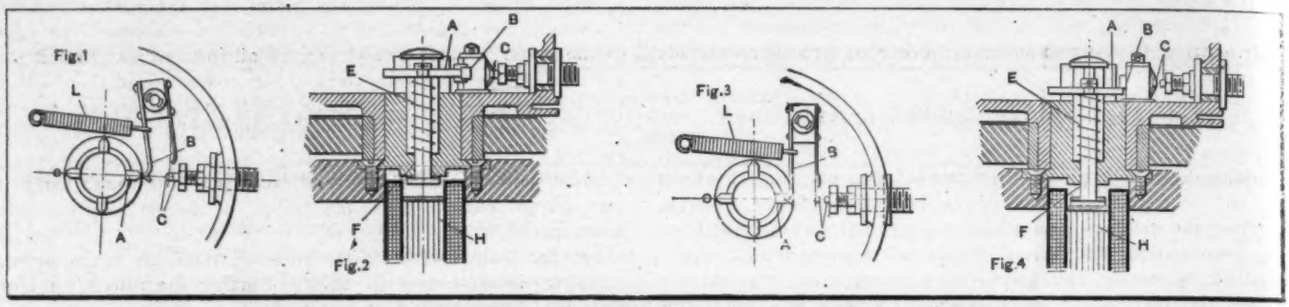


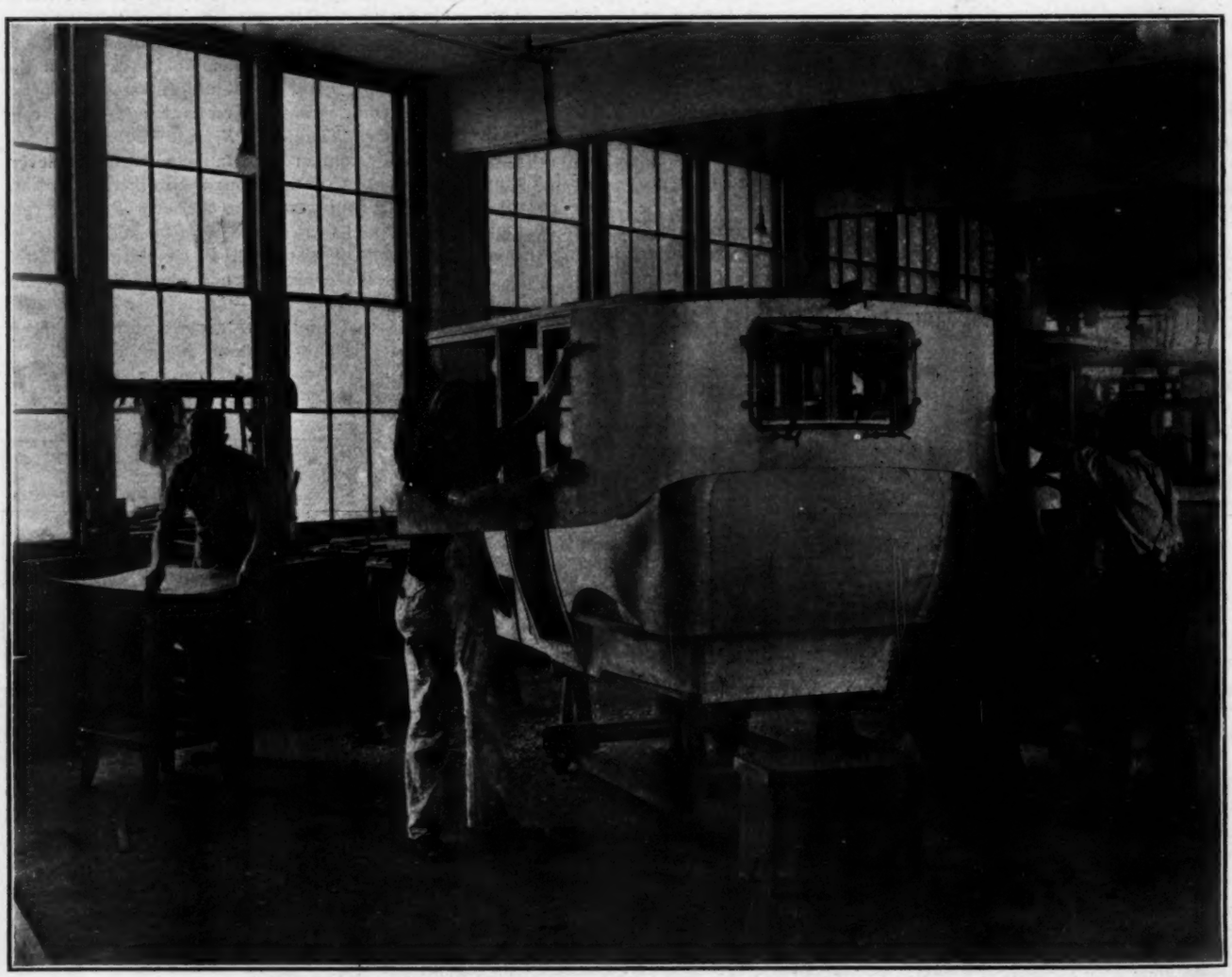
Fig. 5—The igniter as it appears ready to be put in place



Figs. 1, 2, 3, and 4—Illustrating operation of the B. & S. Igniter, Model 10

limit with the cam in the plane of the contact arm *B*, by the spring *E*. With the cam *A* in its normal position in the plane of the arm *B*, rotation of the cam causes the contact points *C* to press together and separate, and without other provision the duration of contact of these points would, of course, vary with the speed of the motor. With this breaker, however, the instant the contact points *C* are brought together, the current passing through the primary winding causes the core of the coil to become magnetized, thus attracting the plunger *F* and drawing it instantly from its normal position. The contact arm is then retracted by the spring *L* pulling the arm over the top of the cam as shown in Figs 3 and 4. The instant the circuit is broken the cam is free to return to its normal position by the action of the spring *E*, provided it has passed in its rotation from beneath the hook. In the event that the motor stops at the instant the contact points *C* are brought together, it is obvious that the magnetic action of the coil will draw the cam from its normal position and the contact arm will be pulled over the top of the cam, thus making it impossible to close the circuit until the cam is rotated by starting the engine. At high speeds, the duration of contact is so short that the magnetic action does not have an opportunity to work. It is, therefore, effective only at low speeds when the duration of contact would be so long as to be wasteful of current, and the balance of the transformer coil disturbed. Hence the spring *E* is required to do no work except at low speeds, while at high speeds the only spring in action is the one marked *L*, and this works only between very small limits.

The construction is such that rotation of the shaft backward will produce no spark, although the company will furnish on special order for two-cycle engines a contact-maker of the same type that will operate in either direction. The igniter, as it appears ready for adjustment, is shown in Fig. 5.



BODY MAKING ILLUSTRATED—TAKEN AT PACKARD PLANT, DEPICTING METHOD OF LAYING ON ALUMINUM SHEETS

Among the Makers

VALUE OF DROP FORGINGS; MARMON AUTOMOBILES FOR 1911; AMERICAN 1911 PLANS; A NEW TYPE OF WOODEN WHEELS; COMMUNICATIONS

THIS year brings notice of refinement that was beyond the dream of the little band of men who first introduced the automobile to a then reluctant and much-scattered clientèle. It will be remembered that when automobiles were first designed the foundry was a very important place, and the maker of patterns in wood was the dictator of progress. But the reason why wooden patterns preceded castings and the latter were utilized was because the procuring of forgings in the shapes required was at a cost that could not be tolerated, moreover it was a long road from the practices in drop forging plants of that time to what the makers of automobiles really had an eye upon.

Gradually the drop forging plants expanded; slowly the sizes of forgings that could be made were increased, and finally the practice of drawing steel and stamping shapes came into vogue.

In the meantime the quality of steel had to be coped with; the material used in drop forgings and for pressed-steel parts must embody special characteristics. Even when the material is of the best obtainable grade it deteriorates under the hammer or when it is being drop forged, unless subsequently treated; *i. e.*, after the forgings are shaped it is necessary to "correct" them.

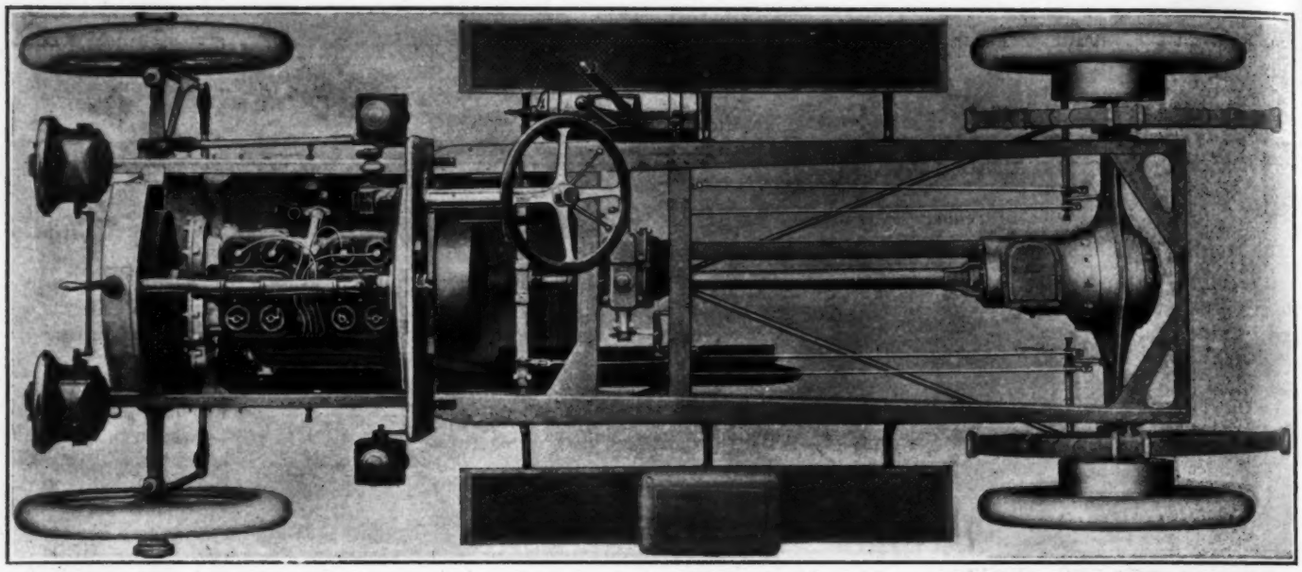
The corrective treatment is usually conducted in the form of an annealing process. It was originally supposed that the forgings would be suitably heat-treated at the drop forging plants; this idea is even carried out to some extent. The importance of the corrective measures ultimately reached such proportions that the more advanced makers of automobiles evidently reached the conclusion that it would be better to fit out for the work and make it a regular process in their own plants.

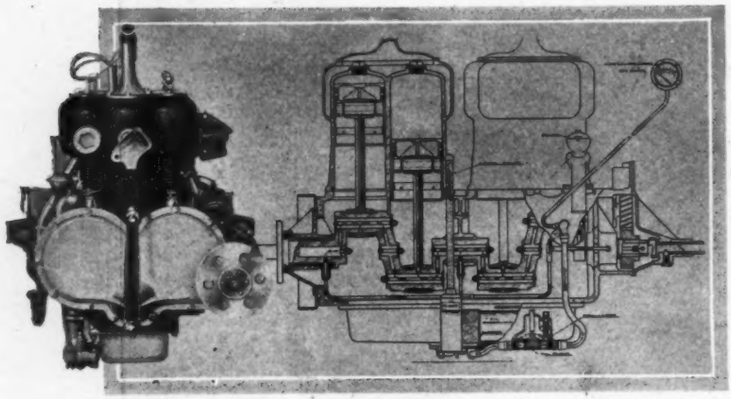
The illustration here given shows one of the most approved ways of annealing forgings in order to induce in them the original kinetic qualities of the material. In this process the parts are submerged in a molten bath of chloride of sodium and barium in such proportions as will afford the right annealing temperature. The proportions of the salts may be varied over broad ranges, and they are rendered molten by passing an alternate current of electricity through the mass. A pair of iron electrodes are first used; when the salts melt the current of electricity penetrates the mass and the temperature is maintained at a constant level. Any desired temperature can be maintained; true, the proportions of the salts must be regulated to accord with the range of temperature demanded by the character of the work.

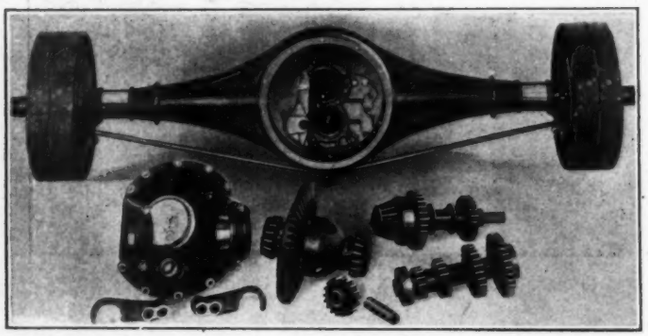
The strength of a drop forging before it is annealed is far below the original strength of the material used in making the forging, and, unfortunately, the forging labors under internal stresses that render it unsafe. Castings, to quite a little extent, have this undesirable property, and this, together with the low strength, generally, of castings, constitutes the reason for desiring to substitute forgings instead. But if the forgings are not annealed and they have, in consequence, the same faults there is nothing to be gained by adopting them.

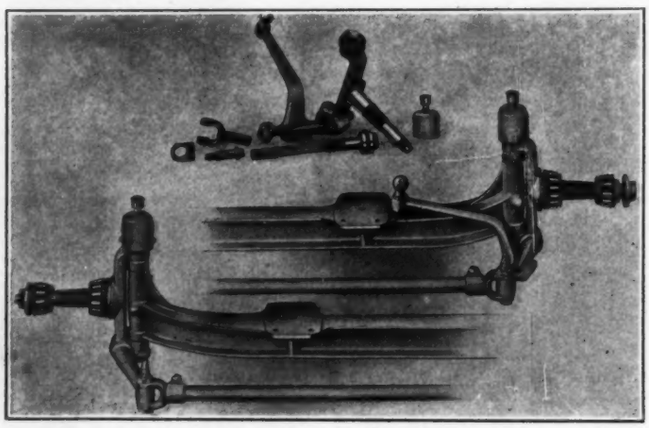
ANNEALING A DROP-FORGED SPECIAL STEEL I-SECTION AXLE IN A MOLTEN SALT BATH—WOODS ELECTRIC

In many of the plants this heat treatment question is extended to a point where all the steel used is manipulated, and to some extent this plan is made to serve for the purpose of reducing the number of brands of steel that are used in the cars. It is claimed that, by heat treating, it is possible to accentuate the qualities of steel in the several directions; if the parts are to be glass hard they are rendered so; if they are to be soft, they are made soft; likewise they may be brought to some intermediate state that will more or less represent some one of the infinite varieties that lie between the two border lands.









Marmon Presents '11 Line

RACING experience is telling the Nordyke & Marmon Company, Indianapolis, Ind., what it has to do to make its automobiles stand up to the work that has to be done by an automobile to render it thoroughly serviceable when it is placed in the hands of the ordinary user. When a bridge is built the engineers introduce what is termed a "factor of safety," but it must be remembered that a considerable number of bridges fell down before the engineers were able to understand just what constituted this "factor of safety." True, it was the idea of the designers of bridges to make the structure twenty times as strong as it would have to be to just stand up under the greatest possible load that it would be called upon to bear. A thousand unknown quantities intervened, hiding the light of understanding, and it was experience, in the long run, that helped the engineers to arrive at safe conclusions.

That the Nordyke & Marmon Company realized that it was necessary to get experience is shown by the tenacity with which it has pursued the strenuous life. The concern was founded in 1851; it built machinery up to 1905 and organized its automobile department at that time.

For 1911 the output of the company in the line of automobiles will consist of one general design, the motor being rated at 32-40 horsepower. The general design of the Marmon model of 1910 will be adhered to. Few changes of moment were found to be desirable. The most important, perhaps, is the lengthening of the wheelbase to 120 inches. The longest wheelbase for last year's Marmon was 116 inches—this was in the Model 32. The tread is 56 1-2 inches. With one model only, in which every effort is concentrated, it remains to afford to the clientèle of the company a variety of body options which are best described by illustrating from photographs.

What the Power Plant Looks Like with Accessories

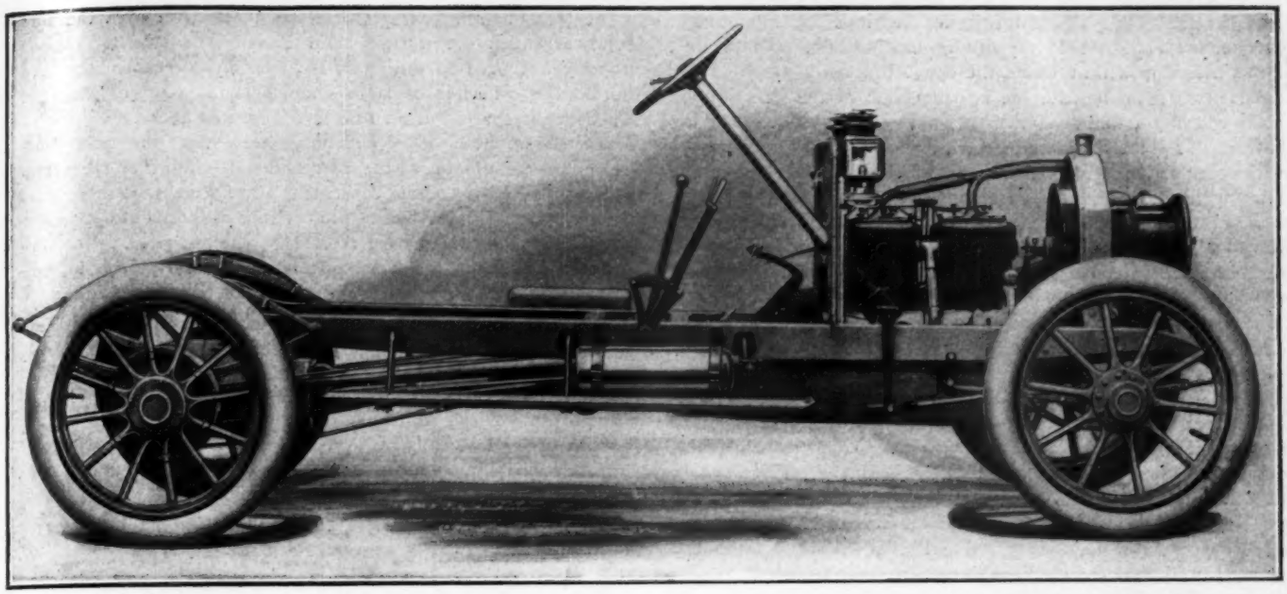
The disposition of the power plant is shown in Fig. 1, which is a plan of the chassis, and amplified in Fig. 5, which is a side

Fig. 1—Marmon chassis plan view

Fig. 2—Marmon "Thirty-two" motor, front view

Fig. 3—Rear system show how differential and transmission gears are removed and replaced through rear of axle housing

Fig. 4—Front axle; weight is carried on ball thrust bearings



REFINED LIVE REAR AXLE; EXCELLENCE OF THE MOTOR; SUBSTANTIAL FRONT AXLE; LUBRICATION MUCH REFINED; COMPREHENSIVE LINE OF BODIES

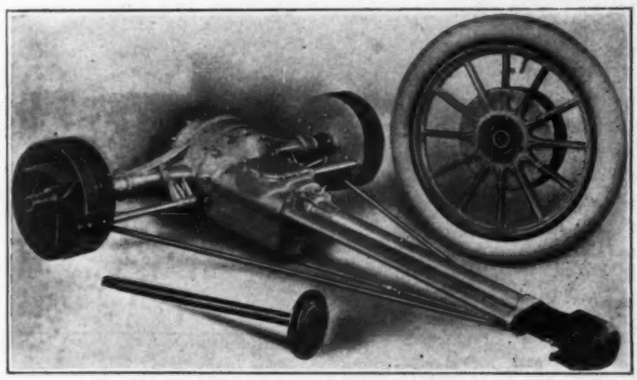
view of the chassis. Fig. 2 is an end view of the motor at the left and a section of the same at the right. Fig. 7 presents right-hand side of motor and Fig. 8 the left-hand side.

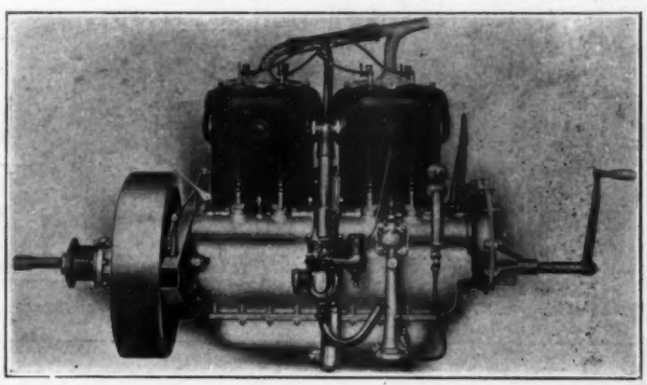
The motor has four cylinders with a bore of 4 1-2 and a stroke of 5 inches. The cylinders are cast in pairs, work four-cycle and are water-cooled. The right-hand side of the motor as presented in Fig. 7 gives the position of the carbureter, to which is attached a one-piece vertical member through which the carbureted air passes to a point between the two pairs of cylinders, which in turn are so designed that the mixture enters transfer ports from the carbureter standpipe, thus eliminating the customary horizontal portion of standpipe construction.

Fig. 8 shows the magneto resting on an extension of the upper half of the case driven by an extension shaft from the water pump, thus bringing the pump and magneto in common shaft alignment, but with a view to ease of installation and practicability in performance a universal joint is placed not only between the magneto and the pump, but also between the pump and the pinion by means of which the shaft is rotated.

The clutch is of the cone type, is nested within the flywheel confines, and the clutch mechanism, including the spring, is enclosed in a protecting housing. By glancing at the chassis plan in Fig. 1 an idea of the compactness of the clutch mechanism will be gleaned, and it will be there observed that a tumble shaft with square ends intervenes between the extremity of the clutching mechanism and the universal joint housing which is supported on a stout cross bar.

The power as it is transmitted through the clutch and tumble shaft to the propeller shaft within the tube is taken up and passed along to the transmission gear, which is a unit with the live rear axle. A general view of this unit is shown in Fig. 6, but a better understanding of the details of design will come from studying Fig. 3. In this it will be observed that a unit plan of assembling is brought into play. The differential gears of the bevel type are shown in a housing to which is attached the





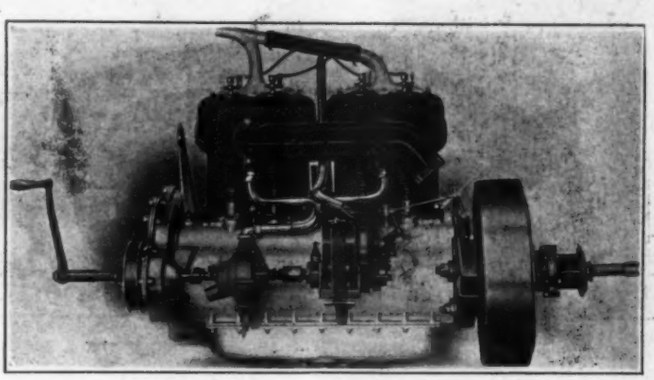


Fig. 5—Marmon chassis, intake side

Fig. 6—Marmon rear system showing brakes and speed gear change box attached to axle housing

Fig. 7—Marmon "Thirty-two" motor, intake side

Fig. 8—Marmon motor showing exhaust side and magneto

large beveled gear, and conical roller bearings are mounted in place on the two ends of the differential housing. To the left of this assembly will be found the supporting grid, which is also contrived to accommodate the bearing back of the bevel pinion on the end of the main shaft of the sliding-gear system. The lay shaft of this system is also in view, and through the good office of the supporting grid, considering the methods of design, the entire aggregation may be assembled independent of the axle housing, after which they may be thrust into place with the assurance that they will be in proper alignment and so related to each other that the intended functions will be performed noiselessly and well.

Lubrication and the scheme of execution will be better understood by examining the section in Fig. 2, which shows a drilled-out crankshaft to which oil is fed under pressure by means of a force pump that is incorporated into the lower half of the crank-case. The oil well is located in the lower half; means are at hand for filtering the oil and the arrangement of piping and ducts is with the view of forcing a continuous stream of oil up through the crankshaft to the connecting rod bearings, thence along the connecting rods to the gudgeon pins, and finally to the cylinder walls. In like manner the main bearings are kept in a flooded condition and means are at hand to take care of the excesses of lubricating oil, all of which finally returns to the oil well in the lower half of the crank-case, properly lubricated and in fettle to begin another cycle.

The front axle design and the attending details are shown in Fig. 4. The axle is of the I-section, liberally proportioned for the work, and the knuckle bearings are especially long, with means for lubrication. Conical roller bearings are used, and besides affording the means of adjustment to take up shake, they are securely locked into place by means of well-designed locking nuts. The steering arm is of stout build, with a large spherical joint, and the details throughout are in keeping with the best practice.

The transmission gear is three-speed selective, with the side levers arranged for a right-hand drive. The steering post is properly anchored to the dash, is given an agreeable rake, and the steering wheel is of large diameter with a properly shaped rim with the spark and throttle levers located above.

The chassis frame is of channel section steel; the spring suspension is full-elliptic at the rear and half-elliptic at the front. The details of the chassis construction are worthy of more than passing notice. At the point of narrowing at the front the flanges are wide, and there are two cross bars coming close to the universal joint so that the lateral strength of the frame is in fullest keeping with the requirement. The flanging narrows toward the back, but large gusset plates are used to tie in the rear cross bar. Trunnions are provided and fastened to the side bars near the rear cross bar by means of which the full-elliptic springs are free to swing by them in response to the motions induced by road inequalities. There is an entire absence of castings on the chassis; pressed steel is utilized as brackets for the footboards and at such other points as experience dictates. From the center cross member forward, the side members have a drop flange to which the mud pan is secured with spring clips accessible from the sides.

SPECIFICATIONS FOR MARMON

MODELS	Price	H.P. A.L.A.M.	BODY		MOTOR				COOLING		IGNITION		Lubrication
			Type	Seats	Cyl.	Bore	Stroke	Cyl. Cast	Radiator	Pump	Coil	Battery	
Thirty-two.....	$2650	32.4	Tour'g.	5	4	4½	5	Pairs.	Cellular.	Cent'fl...	Magneto.	Battery.	F.Feed.
Thirty-two.....	2650	32.4	Lub'n .	4	4	4½	5	Pairs.	Cellular.	Cent'fl...	Magneto.	Battery.	F.Feed.
Thirty-two.....	2650	32.4	R'ster...	2	4	4½	5	Pairs.	Cellular.	Cent'fl...	Magneto.	Battery.	F.Feed.

If the power plant and the methods of its installation and control may be regarded as representative of the latest Marmon practice, it will greatly facilitate matters along this line to point out that the brakes and the various other means of controlling the road performance of the car are also adequately cared for. Fig. 6 shows the two pairs of internally expanding brake shoes placed side by side upon the axle member; the drums are of large diameter and the shoes are wide, so that the pressure per unit of area as it comes upon the friction bands is kept within the limit, having in view the fact that the best braking performance follows when a fabric is used, if the same is fireproof, and the speed of rotation is substantially that which obtains with road wheels.

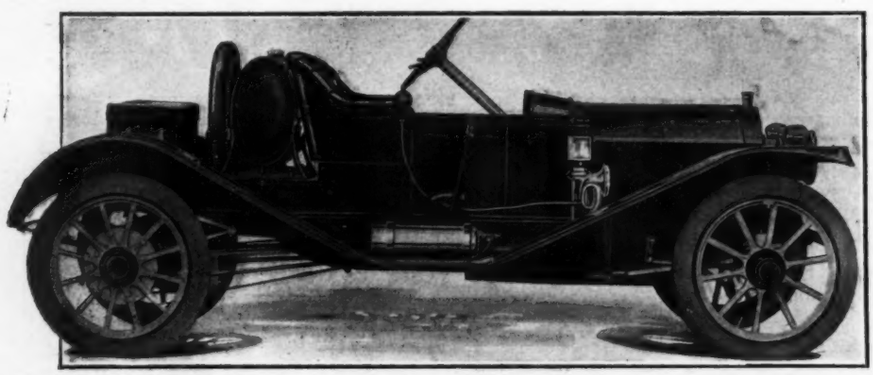


Fig. 11—Marmon "Thirty-two" roadster. Regular equipment as shown except the extra tire

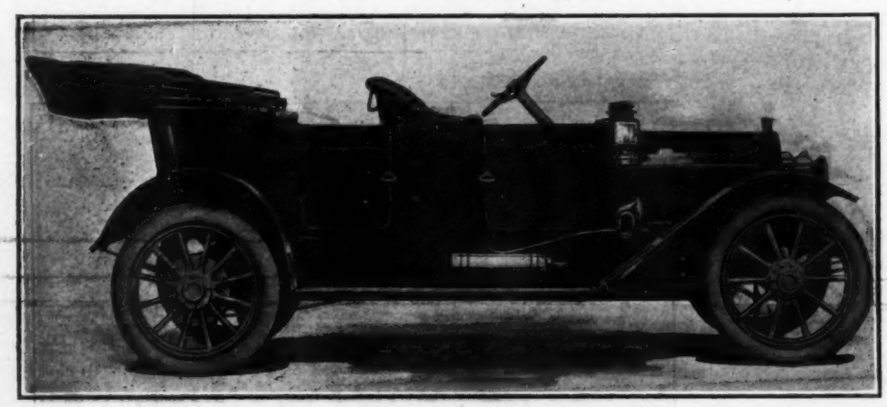


Fig. 12—Marmon "Thirty-two" five-passenger touring car

Among the several types of bodies offered, the closed-front, for the five-passenger touring car, is especially notable, its straight-line effect appealing strongly to the taste of the critical. A similar body, somewhat shorter, is offered for those desiring a four-passenger toy tonneau effect. This car is offered in an open-front body also, while landaulets, limousines and coupés are built to order. A smart roadster, with gasoline tank, trunk and tire rack at the rear of the seats, is offered with the regular line.

The brakes are very large, effective, durable and absolutely dust-proof, with the most convenient adjustments. Quick detachable rims and 34 x 4 tires are standard, with an option of 32 x 4. One adjusting nut takes up all the play in the irreversible steering gear, an 18-inch wheel insuring ease and comfort in steering.

The easy-riding qualities for which the Marmon has always been noted are maintained by the use of well-proportioned full elliptic rear springs and semi-elliptic front springs.

Bodies are made of special perfected cast aluminum with sheet metal seat backs. Blue black with gray striping is the standard color scheme, although any other combination may be ordered. The upholstering is marked by the best of workmanship, only the best of genuine leather being used, with leather welts and binding. Spring backs, spring edge cushions, white curled hair piled, and clinch tufting buttons are used.

The fenders are of neat and graceful design, substantially made of sheet steel. They are enclosed next to the body, both front and rear and have outside flanged edges. The steps or running boards are of cast aluminum with neat pyramid surface and metal guards close the space back of the steps from the front to the rear fenders, thus confining the rush of air and carrying the dust far to the rear.

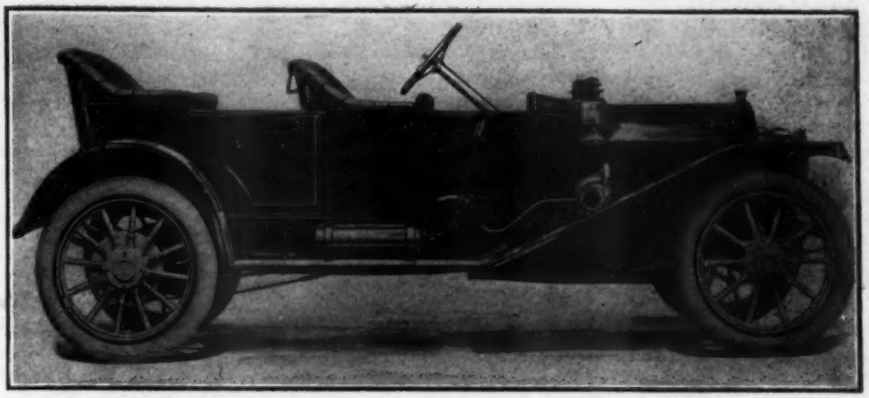


Fig. 9—Marmon "Thirty-two" four-passenger suburban

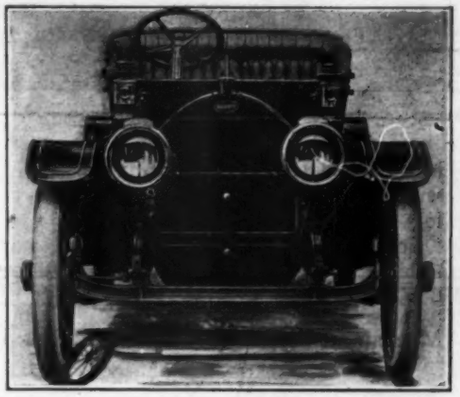


Fig. 10—Marmon "Thirty-two," front view

CARS AS OFFERED FOR 1911

Clutch	TRANSMISSION				Wheelbase	Tread	Frame	BEARINGS			Weight	TIRES	
	Type	Speeds	Location	Drive				Crankshaft	Transm'n	Axle		Front	Rear
Cone....	Selecti'e	3	Axle...	Shaft...	116	56½	P. Steel..	Plain...	Ball....	Roller...	2,300	34x4	34x4
Cone....	Selecti'e	3	Axle...	Shaft...	116	56½	P. Steel..	Plain...	Ball....	Roller...	2,300	34x4	34x4
Cone....	Selecti'e	3	Axle...	Shaft...	116	56½	P. Steel.	Plain...	Ball....	Roller...	2,300	34x4	34x4

Standard equipment includes two 8-inch gas lamps, option of generator or Prest-O-Lite tank, dash and tail lamps, horn, coat rail, foot rest, pump, jack and complete outfit of tools. Top, windshield, speedometer, clock, tire irons, trunk rack, air tank, and any other accessories not specified in the list, are charged extra at current prices.

All three of the Marmon body types for the season of 1911 are listed at $2,650—the Touring car seating 5; the Suburban, 4, and the Roadster, 2.

Front axle assembly, presenting an I-section axle with a drop center, long knuckle bearings, means for lubrication, and refinements

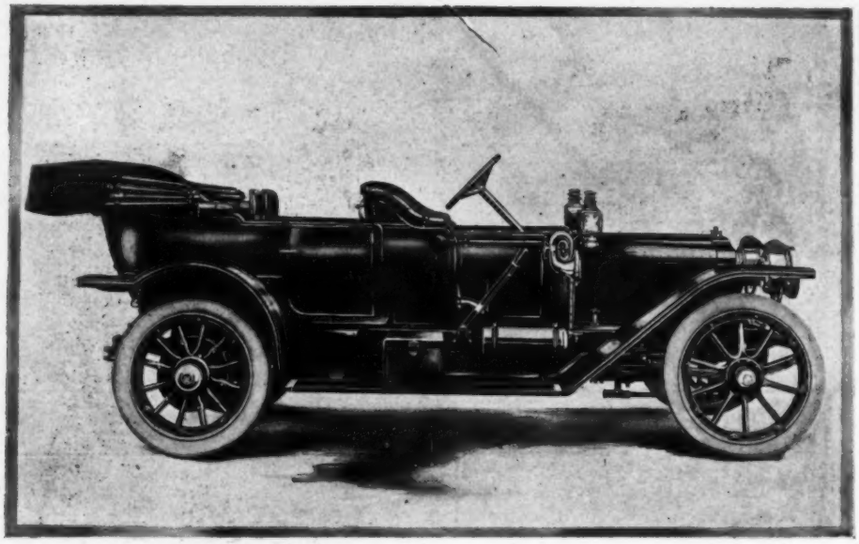
ADVICES from the American Motor Car Manufacturing Company, of Indianapolis, Ind., continue to indicate that the products of this make are holding the interest of a large and growing clientèle; the underslung scheme of design continues to make staunch friends, and large diameter road wheels assure easy riding under severe road conditions, with the further advantage of accentuated tire life. The remaining conditions for harmony are in the form of a long wheelbase, well-balanced weight distribution and ample power. The line of cars is somewhat extended, and in many ways the mechanical details are brought up to a higher state of perfection.

Reserve power has always been the starting point of the designers of this company, and the 1911 motors have been specially designed to bear out the reputation for high efficiency in this respect that the company's product has always borne.

The advantages of the underslung frame are obvious, for besides the minimizing of the tendency to side slip and rear lash at high speeds, a perfectly true straight-line drive is made possible and the occupants assured immunity from harm in the event of a front spring breaking. To these advantages must be added the low center of gravity, which decreases the possibility of turning over almost to the vanishing point.

Of the nine models which will be standard during the coming year the Roadster Special, the Speedster and the Traveler Special are equipped with motors developing 52.9 horsepower A.L.A.M. rating, while the Roadster, Roadster Coupé, Traveler, Traveler Coupé, Tourist and Limousine are all driven by 46.2-horsepower engines.

The Roadster and Speedster types are all two-passenger bodies; the Travelers, with the exception of the coupé, are five-passenger propositions (the latter carrying but four), while the Tourist and the Limousine each has a seating capacity of seven. All the Roadster and Speedster chassis have 112-inch wheel base, the other models measuring 124 inches in this particular—the tread



Fore-door type of "American" Tourist

in all models being uniformly 56 inches. The weight of the several types varies from 2,600 pounds in the Roadster Special to 3,600 pounds in the larger cars.

Considerable experience on the road has added stability to the contention that the weight question is on a basis of great stability.

Mechanical Features Brought to a High State

One of the principal objects in utilizing the underslung idea, coupled with a long wheel-base, is to attain perfection under severe road conditions. The center of gravity of the car is brought as close to the ground as possible in order that the turning over speed will be maximum. The factor of safety from the autoist's point of view lies in the difference between the speed at which the car travels and the speed at which it will turn over. This factor of safety is definitely established in this car. With a fixed tread, which is one of the conditions that every automobile must conform to, the turning over speed increases as the center of gravity is lowered. The American Motor Car Company, of Indianapolis, Ind., points out in its literature that the factor of driving safety will be 100 per cent. when the autoist is traveling at 42 miles per hour on a curve with a radius of 571 feet. This is the same as saying that safety terminates when the car is going 84 miles per hour around a curve the radius of which is 571 feet. Of course, it is not recommended that autoists should force the speed up to 84 miles per hour, but it is worth something to know just what the safe limit is.

Having in view the necessity of a low center of gravity and the appending conditions, the mechanical equipment of the American cars is along lines consistent with the engineering aim. The motor is identical in the five models, having four cylinders, 5 3-8 x 5 1-2 inches bore and stroke, respectively, cast in pairs, working four-cycle water-cooled. The remaining models are fitted with a larger motor. Lubrication is positive utilizing a pump for circulation. The power is transmitted from the motor through a leather-faced cone clutch of proven proportions to a selective type transmission with four speeds, the same being located amidships on the frame. From the transmission to the live rear axle a shaft drive is used. The wheelbase is 112 inches in the Roadster, Roadster Special, Coupé and Speedster. In the Tourist model, however, the wheelbase is 124 inches, and this length obtains in the Traveler Special, Traveler Coupé, Tourist and Limousine. The tread is 56 inches in each case; pressed-steel side frames are used in all models. The bearing situation is adequately cared for through the good office of three plain bearings on each crankshaft, ball bearings are in the transmission system and throughout the axles. It is pointed out that the weight of the respective models is fixed with a view to good road performance and economy. If a car is too light there will not be sufficient traction and the tires will be worn out by slippage, but if the weight is excessive the tires will be disrupted. Fixing the weight, then, is regarded as an engineering situation of no mean purport.

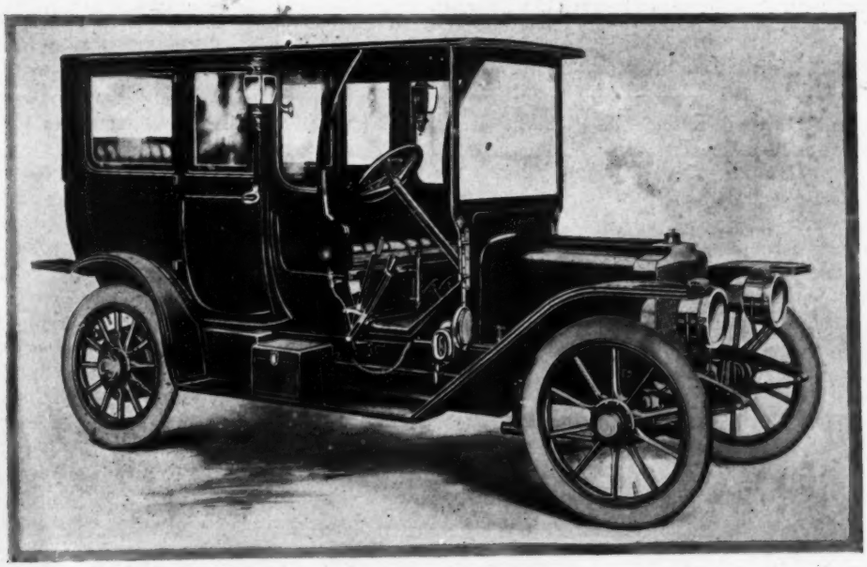
The tires used are especially large, they being 40 x 4-inch front and rear on the Roadster, 36 x 4-inch front and 36 x 5-inch rear on the Roadster Special, which size obtains with slight variation on three models, while the 40-inch diameter tire holds sway on four of the models.

The motor has two arms extending out from the upper half as depicted in the illustration of the left-hand side of the motor; the magneto M_1 is placed on a shelf that is cast integral with the top half

SPECIFICATIONS FOR AMERICAN

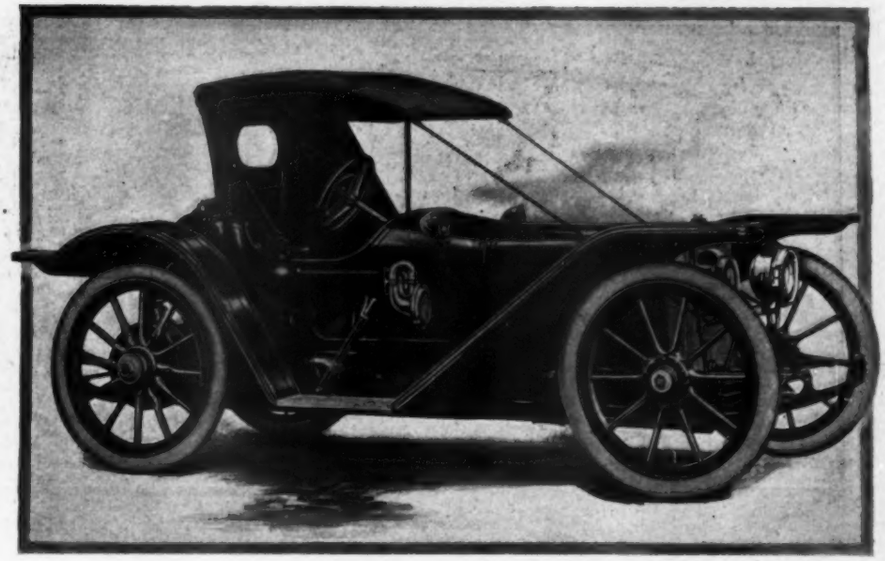
MODELS	Price	H.P. A.L.A.M.	BODY		MOTOR				COOLING		IGNITION		Lubrication
			Type	Seats	Cyl.	Bore	Stroke	Cyl. Cast	Radiator	Pump	Magneto	Battery	
Roadster	$4250	46.2	R'ster.	2	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
R'ster Special	5000	52.9	Rac'g.	2	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
R'ster Coupe	5250	46.2	Coupe.	2	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Speedster	5000	52.9	Sp'ster*	2	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Traveler	4250	46.2	T'ring.	5	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Tr'ler Special	5000	52.9	T'neau.	5	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Tr'ler Coupe	5250	46.2	Coupe*	4	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Tourist	4250	46.2	T'ring*	7	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.
Limousine	5250	46.2	Limous.	7	4	5⅜	5½	Pairs.	Tubular.	Cent'fl.	Bosch	Storage.	Pump.

*Pow-



"American" Limousine

also and the drive for the magneto is the same as for the pump P_1 for the circulation of the cooling water. Between the pump and the half-time gear housing H_1 an Oldham joint J_1 is located; by means of this joint all details of alignment are cared for, and in the event it is desired to remove and replace the pump or the magneto, the work may be accomplished without trouble or the fear that the parts will not go back into place and serve as well as when the motor comes from the assembling room of the maker. Among the other nice details of design that show good execution is the fan F_2 for propelling of air; it is driven by a wide leather belt B_1, taking power from a shrouded pulley that is fastened to the same shaft that drives the pump and magneto. The flywheel F_1 is of large diameter and sufficient width to assure an adequacy of flywheel effect; this is a necessity for a well-behaved, sweet-running motor. The lubricating oil is contained in the round oil holder O_1 which is seen between the two pairs of cylinders.



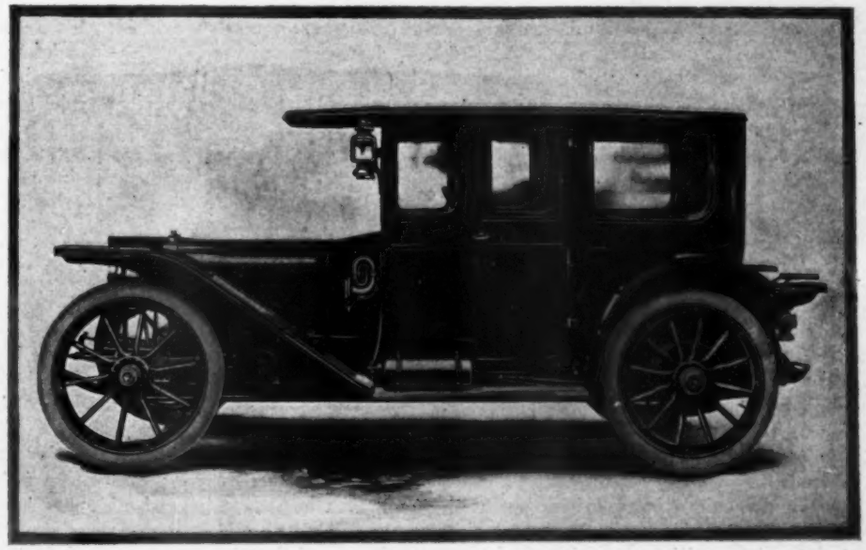
"American" Torpedo Roadster

Glancing at the right-hand side of the motor it shows the Stromberg carbureter C_1 and a manifold of good shape M_2 Just above the intake manifold is the exhaust manifold M_3. For the breather B_2 there is an adjustable cap. The lubricating oil passes through the pipe O_2 and is maintained in active circulation by means of a plum that is located in the bottom half of the case. Plates P_1 and P_2 permit of access to the bottom half from the under side for purposes of cleaning and the oil pump is so located there that it can be removed and replaced at a moment's notice.

The front axle is of the I-section as shown in the title illustration. The shape is such as to afford great strength, and the knuckle bearings are large for the work with ample means for lubrication.

The steering equipment in addition to the use of a steering gear of the worm-and-sector type, with long and substantial bearings, a grease-tight case and a means for lubricating is rendered more substantial by the liberal yoke type of joints that are securely fastened to the cross and drag rods, through which steering is done. The material employed in these important members is selected with discrimination and the method employed in the fashioning of the parts is with the distinct idea of security. Instead of depending upon the ordinary keying methods at the various points in the transmission system, flanging is resorted to wherever it is possible; as an illustration of the working out of this idea, the floating axle members are flanged at the outer end and are milled around the periphery of the flanges to form integral claws that engage mates in the hubs of the wheels. At the other extremity of each floating member a fluted drive is used, and it is so designed that the floating members may be withdrawn at will. Moreover, the driving faces are on integral metal with four pressure points, whereas with a key there would be but one.

In the design of the clutch account is taken of the ills of inertia so that flywheel effect is reduced to a minimum. This is brought about by using the least possible amount of metal consistent with strength. But there is another innovation in the clutch, which takes on the form of air propeller veins, so that the clutch, in addition to serving for its normal purpose, adds its quota in the direction of keeping the motor cool. The clutch spring and the relating parts are protected by a dust-proof housing with means for introducing lubricant. The four-speed transmission gear is designed for strength, the spindles being short, and the gears of sufficiently wide face, considering the

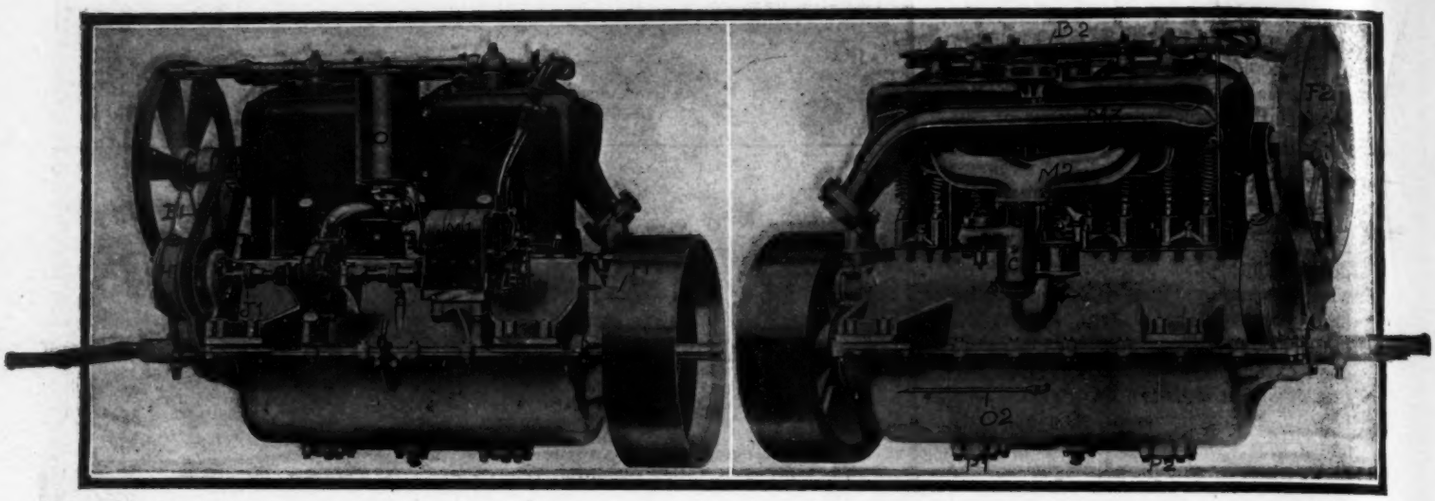


"American" Traveler Coupé, with left-hand drive and center control

CARS AS OFFERED FOR 1911

	TRANSMISSION							BEARINGS				TIRES	
Clutch	Type	Speeds	Location	Drive	Wheelbase	Tread	Frame	Crankshaft	Transm'n	Axle	Weight	Front	Rear
Cone....	Selecti'e.	4	Frame.	Shaft...	112	56	P. Steel.	3 Plain	Ball....	Ball....	2,900	40x4	40x4
Cone....	Selecti'e.	4	Frame.	Shaft...	112	56	P. Steel.	3 Plain	Ball....	Ball....	2,600	36x4	36x5
Cone....	Selecti'e.	4	Frame.	Shaft...	112	56	P. Steel.	3 Plain	Ball....	Ball....	3,600	40x4	40x4
Cone....	Selecti'e.	4	Frame.	Shaft...	112	56	P. Steel.	3 Plain	Ball....	Ball....	3,600	36x4	36x5
Cone....	Selecti'e.	4	Frame.	Shaft...	124	56	P. Steel.	3 Plain	Ball....	Ball....	3,200	40x4	40x4
Cone....	Selecti'e.	4	Frame.	Shaft...	124	56	P. Steel.	3 Plain	Ball....	Ball....	3,200	40x4	40x4
Cone....	Selecti'e.	4	Frame.	Shaft...	124	56	P. Steel.	3 Plain	Ball....	Ball....	3,600	40x4	40x4
Cone....	Selecti'e.	4	Frame.	Shaft...	124	56	P. Steel.	3 Plain	Ball....	Ball....	3,200	36x4	36x5
Cone....	Selecti'e.	4	Frame.	Shaft...	124	56	P. Steel.	3 Plain	Ball....	Ball....	3,600	36x4	36x5

door type.



Magneto side of "American" Traveler and Roadster engine

Intake side of motor used on "American" Traveler and Roadster

excellence of the material, to withstand the exigencies of service during the life of the rest of the car. In the selective system the pick-up levers and yoke with guides and plungers are made into a separate unit, thus assuring perfect alignment. Provision is made for safety, it being impossible to have more than one

(*Continued on page 422.*)

Communications

VERY FEW HOUSES MORTGAGED TO BUY AUTOMOBILES; WANTS A NATIONAL LICENSING LAW FOR AUTOMOBILISTS; AFFORDING THE LATEST VIEWS IN RELATION TO THE EXPEDIENCY OF OWNING AN AUTOMOBILE

The Parson's Tires and Taxes—My little study set in the peaceful frame of a country parsonage is not often the theater of revulsions against the existing order, and it is with deep consciousness of the errors to which the human mind is prone that I venture to broach a subject so essentially worldly as to lie perchance beyond the province assigned to me. I feel, however, that I must bestir myself. This turbulence must be removed from my mind before I shall be able and fit to assuage sorrows and allay tribulations among my simple and honest parishioners who have learned to look to me for remedial powers over their troubles through the grace of divine faith. Let me initiate you in the situation. Scarcely a twelve month has lapsed since my good friends tendered me, out of their good will and after careful counsel of the proprieties, a mechanical vehicle by the aid of which it was believed I might be able to reach the sick and disconsolate in need of ministration. And I have greatly appreciated this thoughtful and modern gift. It has permitted me several times to meet and speak to the elders of neighboring towns, where the pure word is seldom heard, and my hired man Benjamin, who attends to agricultural and horticultural work at the parsonage and receives a half share of the income vouchsafed me through this source, assures me that a gain not wholly immaterial may be attributed to the uninterrupted employment of two horses whose services were formerly frequently required by me for parochial visits.

As it did not appear seemly that a man of the cloth should travel with a rapidity that partakes of haughtiness and engenders resentment, my parishioners manifested no little wisdom in selecting a mechanical vehicle resembling a buggy and having four high and thin wheels. With this I am enabled to travel in becoming modesty and I notice with much satisfaction that the dust, which unfortunately lies thick over our country thoroughfares, lanes and causeways, does not rise in opaque and rolling clouds following my progress and heralding my arrival.

For the quiet errands of mercy in which my friends particularly intended this vehicle to become instrumental, the rush and roar which, as I have occasion to observe, usually attend the employment of mechanical locomotion on our roads, would seem to be poorly in accordance with the command that thy left hand shall not know what thy right hand is doing.

I come now to that which has perturbed me. A printed notice was sent to me through the mail ordering me to forward the amount of the "automobile tax" duly and lawfully levied against me by reason of my possession of the mechanical vehicle above referred to, and I have taken pains to ascertain by careful inquiry that the amount which I am required by law to pay into the treasury of the commonwealth is exactly equal to the amount assessed against owners of vehicles which are equipped with large and thick tires and which, as I have personally observed, are enabled by means of these tires to travel, with comfort to their occupants and discomfort to others, at high speed. It was told me, and I have since verified this contention by correspondence with competent authorities on the questions of fact, that the chief reason which induced our legislators to impose a special financial burden upon the owners of mechanical vehicles resided in recognition of the injury done to all roads when mechanical vehicles are driven over them at high speed, it being needful to repair such injury and to levy taxes for defraying the expense of the repairs upon the taxpayers at large. My authorities inform me also, however, that the high speed which may be said to be potentially present in high motive power is never released in practice, unless such release may be indulged without discomfort to those seated in the vehicle, and that broad air-filled tires constitute the only known and practicable means by which discomfort at high speed may be effectually removed and, indeed, turned into an exhilaration of almost intoxicating powers over the human mind. Refraining from all comment to which I might be tempted, I quote these statements almost in the words of my legal informant.

Having been reared to apply logical processes in reasoning about the affairs of the world, while taking reason captive under the obedience of the faith in those greater things which transcend all comprehension, I am now moved to direct to you this earnest inquiry: Should not, in true justice, the taxes which are now levied upon mechanical vehicles and against the owners of such be levied, instead, upon rubber tires of the description

known as pneumatic, from being intended to be filled with compressed air, and should not the amount of such tax be regulated according to the size and width of these air-filled tires?

In the comparative seclusion of my work and calling, the broad round tire, fat, rotund, as it comes bounding and swaying and softly undulating curves out of a cloud of the fine white powder of the macadam or from the murky effervescence of the country road, has come to be to me as an offensive symbol, not of mere opulence which is the distribution of Providence for ends we know not, but of a heathenish voluptuosity which recks little of aught but its own satisfactions. Believe me, I do not wish to entertain this turbulent bitterness, and I feel it should be possible to divorce it from my views by communicating with those who know the subject most intimately. Anticipating that the light which I confidently hope will reach me through your columns will cause a radical revision of my present standpoint with regard to tires and taxes, I would ask you to kindly omit my name if you allow me space for this letter in your valuable periodical.

Extravagance and Luxury vs. Economy and Necessity.—The telephone to-day is seldom classed as an extravagance and rarely as a luxury; on the contrary it is an economy and a necessity under modern conditions. The railway train and the electric car have also become necessities and are now recognized as economies if time is indeed a consideration. The argument that these modern means of transportation encourage more travel and the expenditure of a greater amount of money in traveling is refuted by the fact that in effect they reduce distance and save time, making possible undertakings otherwise impracticable.

Mayor Gaynor, of New York, said in a recent statement that the use of the motor car had increased the capacity of city streets six-fold over that of horse-drawn vehicles, which can be further reckoned as a saving of five-sixths of the time, an equivalent of reducing the distance to one-sixth. Would not travel by motor car be economy even with the mileage cost as great as by other means, notwithstanding the fact that the ease in traveling and the saving of time might induce an increase in travel?

It cannot be disputed that the motor car has greatly increased property values, making accessible remote localities, bringing the city to the farm, and the farmer to the markets. It encourages more time being spent in pure air by those confined to offices under the great pressure of modern business, and is of far greater benefit to the owner and his family than would be the annual interest on the same amount at 3 or 4 per cent. It would be quite as reasonable and practical to consider abandoning the electric car to return to the horse car, or giving up the steam railroad car to return to the prairie schooner, as to abandon the motor car.

It would be difficult to conceive of a banker refusing to make a loan on a responsible business merely on the ground that some portion of this money might be exchanged for an article which has astonished the world on account of the practical way in which it has effected a marked saving of time, being the equivalent of reducing distance. It is perfectly true perhaps that men have been known to mortgage their homes or to borrow on life insurance policies to buy machines, and as an indication of reckless extravagance and shiftless foolishness such a performance is to be deprecated, but there is no logic in blaming the automobile maker or denouncing his business as the cause of a silly act.

As a matter of fact there is less of this going on than some critics would have the public believe. A farm located an hour from the market, reckoned on the basis of horse travel, can be brought so much nearer in effect by the saving in a practical way of two-thirds of the time necessary to travel the distance, and why should the privilege be refused, or the farmer censured for employing a modern agent of economy any more than for the use of the modern self-binder in the harvesting of his grain. He is not criticised if he places a mortgage on his farm in order to purchase advanced equipment to carry on his work.

Unofficial statistics have been obtained which are interesting for they indicate that a possible 75 per cent. of the motor cars purchased are bought by those who have previously owned private conveyances, or are using the former in a commercial or semi-commercial way; it has also been shown that the wealthy almost invariably buy expensive cars and more than one car, and on a fair estimate 85 per cent. of the money invested in automobiles is expended by this class.—Harold O. Smith, president Premier Motor Manufacturing Company.

Mester editer af automobil paper Nujork—I ban tenking mester editer tenk dat Swede fello no gude. I get gude yob for dat mester editer sa in mine advertising derefor I pa 80 cent dat I vas gude shofer & I haf not rote tu tank mester editer. Vel I rote now. Ban in yob yoost 10 daes. Der is mester Hues & messes Huoes. Dey wa 400 pown. Der is 3 mamsel Hues & 2 yong Hues wit short pans. I tenk dey all wa 1000 pown. Sunda dey all get in kar an draiv tu Koniailen. Man from neks dore kom tel me kom fiks tire. He go wit me & fine dem were dey was. Dey all go hom with strit kar. I fiks tire & draiv kar. I go slo. Spring war bust. Gude littel Kar wit rum fer 3. Mamsel Kati yoost neks dore lern me inglis over fens. Kati sa yoost rite samma wa I tawk. Fikst spring yestidda an tenk I vill fiks it som more.—Eric Ericsson.

Coming Events

CALENDAR OF FUTURE HAPPENINGS IN THE AUTOMOBILE WORLD THAT WILL HELP THE READER KEEP HIS DATES STRAIGHT—SHOWS, RACES, HILL CLIMBS, ETC.

Dec. 1.....Chicago, Ill., First Annual Aeronautical Exhibition in the Coliseum.
Dec. 31-Jan. 7, '11.New York City, Grand Central Palace, Eleventh Annual International Automobile Show.
Jan. 7-14, 1911...New York City, Madison Square Garden, Eleventh Annual Show, Pleasure Car Division, Association of Licensed Manufacturers.
Jan. 16-21, 1911..New York City, Madison Square Garden, Eleventh Annual Show, Commercial Division, A. L. A. M.
Jan. 28-Feb. 4, '11.Chicago Coliseum, Tenth Annual National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Pleasure Cars and Accessories, Exclusively.
Feb. 6-Feb. 11, '11.Chicago Coliseum, Tenth National Automobile Show Under the Auspices of the National Association of Automobile Manufacturers, Inc., Commercial Vehicles, Pleasure Cars, Motorcycles and Accessories.
Mch. 4-11, 1911...Boston, Mechanics' Building, Ninth Annual Show, Licensed Automobile Dealers' Association.

Races, Hill-Climbs, Etc.

Sept. 5-10.....Minneapolis, Minn., Track Meet at State Fair.
Sept. 7-10.....Buffalo, N. Y., Reliability Run, A. C. of Buffalo.
Sept. 9-10.....Providence, R. I., Track Meet.
Sept. 10.....Los Angeles, Cal., Mount Baldy Road Race.
Sept. 10.....San Francisco, Cal., Golden Gate Park Road Race, Automobile Club of San Francisco.
Sept. 10-12.....Catskill Reliability Contest and Hill Climb, Motor Contest Association.
Sept. 10-12.....Seattle, Wash., Race Meet.
Sept. 15.....Algonquin, Ill., Annual Hill Climb of Chicago Motor Club.
Sept. 16-26.....Asbury Park, N. J., Aviation Meet, Aero Club of America.
Sept. 17.....Syracuse, N. Y., Track Meet of Automobile Club of Syracuse, Syracuse Automobile Dealers' Association and the New York State Fair Association.
Sept. 24.....Belmont Track, Narberth Race Meet, Norristown Automobile Club.
Sept., middle of...Chicago, Commercial Car Reliability Contest of Chicago Automobile Club.

Foreign Shows and Races

May 1-Oct. 1....Vienna, Austria-Hungary, Automobile and Aviation Exposition.
Aug. 1-Sept. 15...French Industrial Vehicle Trials.
Oct. 15-Nov. 2....Paris, France, Aeronautical Society Show.

THE AUTOMOBILE

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Cable Address - - - - - - - - - - - - - - - - Autoland, New York
Long Distance Telephone - - - - - - - - - - - 2046 Bryant, New York

SUBSCRIPTION RATES
United States and Mexico - - - - - - - - - - - - - One Year, $3.00
Other Countries in Postal Union, including Canada - - - - - One Year, 5.00
To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS
ENGLAND:—W. H. Smith & Sons, Ltd., 186 Strand, London, W. C., and all bookstalls and agencies in Great Britain; also in Paris at 248 Rue de Rivoli.
FRANCE:—L. Baudry de Saunier, offices of "Omnia," 20 Rue Duret, Avenue de la Grande Armee, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

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RACING, if it is classed as a sport, interests the supporting public in one way if it is clean sport, and in quite another way if it is conducted on a scurvy basis.

* * *

THE better class of citizen wants clean sport, and is for the square deal. This character of man can be taken in once simply because his natural inference is that a sporting event will be conducted in a clean way, for he assumes that men are sane, and he knows that it is suicidal to conduct a sporting event otherwise than on a clean basis.

* * *

THE other class of citizen, of which America has mighty few, is out for the dollar, and he doesn't care a hang whether he gets a clean one or not. It is this class of man that provides first-class material for the making of a "short-change" artist—he permeates every grade of society, and the automobile industry has seen enough of him.

* * *

HOW to get rid of the alleged sport, or, better yet, the "blackleg," is a serious problem. The supporters of the automobile industry relied upon the rules as promulgated by the "Contest Board" to accomplish this considerable undertaking. Are the rules equal to the task?

RULE 78 on page 24 of the official edition as issued by the Contest Board is as follows: "78. Records—The Contest Board shall pass upon all records and may decline to accept any claim which, in its opinion, would not promote the interests of the sport.

* * *

"NO claim for a record of one mile or under and up to five miles will be considered by the Contest Board, unless the same is taken by an automatic electric or mechanical timing device approved by the Contest Board, and the actual printed evidence taken by such timing device is submitted to the Board together with the claim for the record."

* * *

IF rule 78 debars the Contest Board from accepting a claim for a record, if the same is made in the absence of an electrical or mechanical timing device, has the Contest Board any right to sanction a meet if it knows that the race is to be run in the absence of any suitable provision for carrying out the terms of the rules?

* * *

THE law says that it is a crime to commit murder. A judge passes the death sentence on a convicted murderer; would a judge have any right to help the murderer commit the crime?

* * *

CAN the Contest Board afford to sanction a race if the public is to be "taken in"? Is it not true that the public relies upon the Contest Board to protect it against unclean sport? Is it clean sport to conduct an event and put up a set of conditions that are in absolute violation of the recognized rules?

* * *

IF the Contest Board believes that an electrical or mechanical timing device is necessary in order to ascertain the real time that a car may make, how can it be claimed by anyone that an event recorded in any other way is sufficiently accurate to be worthy of serious consideration?

* * *

MANY of the best citizens who are vitally interested in the success of the automobile industry voice the sentiment which has for its foundation the fact that the racing situation is far from healthy and a detriment to the art. How can it be otherwise if races are to be sanctioned despite the fact that the conditions under which they are to be run are known beforehand to be in absolute violation of the rules?

* * *

IT was stated over the 'phone by a representative of the Contest Board to the Editor of THE AUTOMOBILE on September 6 that there would be no racing to speak of were the Board to decline to give sanctions for events that do not conform to the rules. Does the Contest Board willingly accept a position that is equivalent in every sense of the word to the foxy "bull" that is used at the slaughter house in Chicago to lure cattle to slaughter? Is the public to be treated as cattle?

Jarred Editorial Brains

DISCUSSING THE FEASIBILITY OF HAVING THE EDITOR'S BRAINS PUT IN A JAR FOR SAFEKEEPING WHILE A SELF-APPOINTED SUBSTITUTE DOES THE REST

THE advertising of locomotives in a journal devoted to dressmaking—it not being a kindred subject—litters up the pages of the paper and adds absolutely nothing of value from the subscriber's point of view—in fact, such practice insults the intelligence of the reader.

But in a paper devoted to the automobile, if advertising is confined to the subject that is kindred, it stands to reason that the subscriber is benefited to whatever extent he will be able to improve his knowledge of the subject along constructive lines. Naturally enough, the reader of the paper devoted to the automobile subject would see nothing of value in an advertisement of some grade of whiskey, no more than he would were he confronted by an advertisement of caskets and other funeral trappings.

Of course advertising is placed in a paper for remunerative reasons; certainly, the income of the paper is substantially from advertisers. But a fact is not reduced to the level of a fallacy because it is stated in the advertising pages of a paper. One more point: the paper, if it is well edited, costs more to build than is received from subscribers—considerably more.

This being true, advertising is valuable to the reader; first, on the ground that it states interesting things and relates constructive facts that the reader is interested in, and, second, it affords the means for enterprise, bringing about a condition which permits the editor to reach out and pay for matter that the reader cannot get by perusing the advertising pages.

True, a paper that publishes nothing but puffs for the advertisers offers nothing in return for the subscription price but the same character of information as will be contained in the advertising. Equally true, a paper edited along such lines is more than likely to take advertising that may not be confined to facts.

Is it the proper business of the editor of a paper to censor the material that is to be used in the paper? Take for example:

> "Wanted—A promising yeggman, who is not afraid of consequences; one who can shoot straight; a man, in fine, to be depended upon in an emergency."

In view of the brevity of advertising language it is frequently desirable to editorially comment upon the matter advertised; what comment would a self-respecting editor make were he to take up the subject as it is portrayed in the above specimen of advertising?

But if the same editor were to take an interest in some device that is briefly announced in the advertising pages of a paper that does censor the material that ultimately finds a resting place within the confines of its two covers, is he not doing the very thing that the reader pays his subscription price for? Is the advertiser receiving a special concession?

No. The editor works for the reader of the paper; he is the servant of the reader; his business is to be faithful to the subscriber. If the advertiser gets any benefit at all it is because he has the good sense to do the kind of business that is worth talking about from the reader's point of view.

On this account the paper that employs an honest servant for the subscriber becomes the best medium to advertise in. Why? Because the reader will be a man of influence and discriminating intelligence, and, what is equally to the point, the dishonest advertiser will find the other character of paper in which to expose his wares.

The value of advertising matter to the reader then depends upon the competence of the reader's servant—the editor. If the servant is faithful to his plan the reading matter in relation to the state of the art will be as good as the editor can honestly make it, and the advertiser will be of that class which, having real things to dispose of, selects the medium that commands respect.

When a man elects to purchase an automobile, whom does he consult first? The advertiser? The least intelligent person in his immediate locality? Does he send out to the newspaper stand and buy a copy of a paper devoted to banking, for instance?

Would it be too much to believe that he might ring up his respected friend, or even casual acquaintance, and say: "Hello! Is this you, Mr. Jones? Say, I'm Houseanlot; I want to buy an automobile; don't know a thing about 'em; I see you have a car; it seems to give you satisfaction; what would you do were you in my place?"

Other end of the line, "Well, I'll tell you; the car I have has done very well; it's three years old; I intend to sell it this year and then I will buy a —— car. I see by the paper which I read that things are growing a little better from time to time, and I am able to place reliance in what my paper says; in your case, the demand will be a little different from mine; why don't you subscribe to my paper and get coached up—it will help you to judge better of the possibilities."

In all fairness, considering the situation broadly, it is scarcely to be taken for granted that advertising litters up the pages of a paper unless the advertiser clubs the editor into insensibility; in that event it of course follows that the editorial pages will be but a poor form of advertising, given as a premium by the editor who surrenders his right to think.

Would an advertiser patronize a paper that could not command the notice of readers? Not after the point is made clear. Would readers put in time perusing a paper that comes from a hobbled pen? Not unless they are brainless. Could an editor get rid of his brains any more effectually on a surgeon's table in a well-appointed hospital than he could by allowing an advertiser to club him into submission? Why go further in this vein?

How may a capable medium be known? How does a Mason know another Mason? You say he gives a sign! Does he not display his intelligence? Swapping editors for Masons for the moment, would an editor display any intelligence were he to go to a hospital and say to the surgeon: "Remove my brains from their present abiding place and put them in a glass jar for safekeeping; I do not need them just now; I get money for letting other people think for me."

How long do you imagine that these "thinkers" would support the industry? Let me tell you: just long enough to convince readers that the editor's brains are in a jar on a shelf in the hospital.

What is the sane conclusion? Let us reach it together: The readers of a paper that is edited by "jarred" brains, were they to go to the hospital to have an operation performed upon them, would fool the surgeon and the jar would remain empty. Such readers would have no purchasing power, hence they would be of absolutely no value to an advertiser.

If the advertiser can reap no reward by patronizing a paper, how is the subscriber to get his money's worth out of it? The cost of reading a worthless medium is more than the subscription price; the time consumed is worth something; but, more, the lost opportunity is not to be thrust aside—it might represent whatever it would cost to be decoyed into buying an automobile that it not fitted to the intended service.

But if a man purchases that which he cannot use, no matter what the cost of it might be, he still has to purchase what he wants, and the cost of it must be added to the money wasted; such are the ramifications; they, in a measure, indicate the responsibilities of the character of editor who prefers not to call upon the surgeon.

Doings in the East

PHILADELPHIA CLUB PREPARING FOR FALL RUN—AUTOCAR COMPANY ESTABLISHES SCHOOL FOR DRIVERS—PREPARATIONS COMPLETED FOR SYRACUSE RUN—TRADE ITEMS

—Edwin Swartley, Philadelphia manager for the KlineKar, has resigned.

—William F. Adams has been appointed manager of the Grout branch in Boston and Allie McKenna has been made assistant manager.

—The Moon car is again represented in Boston after a lapse of two years, this time by the Linscott Motor Company. It was taken on to fill out the line.

—F. Wallis Armstrong Company, of Philadelphia, announces that on September 1 the company assumed the assets and liabilities of Powers & Armstrong Company, of the Quaker City.

—President H. O. Smith, of the Premier Company has rewarded Henry L. Johnson, who has so successfully managed the Boston branch for the past few years, with an important factory position.

—The Fanning Motor Company, Philadelphia distributer of the Thomas Flyer, has secured new and more attractive quarters in the Scottish Rite building, southwest corner of Broad and Race streets.

—The Petrel car, a product of Milwaukee and a newcomer to the Philadelphia field, will be represented there by Reamer & Haines, 2214 Spring Garden street, which firm now handles the Baker Electric.

—Boston will have two additional motor chemical wagons if the new fire commissioner, Francis M. Carroll, has his way. He asks for them in his estimate just made up and puts the price at $11,000.

—Jay B. Cothran has been appointed manager of the New York branch of the Fisk Rubber Company to succeed E. H. Broadwell, who has been named vice-president and general manager of the Hudson Motor Car Company.

—The American Automobile Company, of Boston, has secured William P. Barnhart for its manager. He had been manager of one of the big taxicab companies for a couple of years and succeeded in correcting many abuses.

—The Amos-Pierce Automobile Company, of Syracuse, N. Y., will be succeeded in a few days by The Standard Automobile Company, of which C. Arthur Benjamin is the controlling spirit. C. L. Amos and H. C. Pierce have constituted The Amos-Pierce Automobile Company.

—F. G. Seitz, until recently assistant sales manager of the Olds Motor Works, of Lansing, Mich., has been appointed by that company as manager of its Philadelphia offices. His territory will embrace Eastern Pennsylvania, Southern New Jersey, Maryland, Delaware, Virginia and part of West Virginia.

—According to announcement of the S. B. R. Specialty Company, of East Orange, N. J., action has been commenced against the S. Toffler Company in the United States Circuit Court of New York praying for injunction and damages on account of alleged infringement of a muffler-cutout patented by the complainants.

—A 40-horsepower motor chemical has been installed at Belmost, Mass., having successfully passed the required test for efficiency. It will carry 10 men, but on the test more than a score were whisked along over a mile course in four minutes. Previously the machine went 300 feet and had a stream playing in 15 seconds.

—One of the latest additions to Philadelphia's automobile row is the Owen car, the agency of which has been secured by E. R. Jackson and W. H. Walter, under the firm name of the Jackson-Walter Company. The company is temporarily transacting business from the Bellevue-Stratford garage, pending the securing of suitable quarters on North Broad street.

—The Autocar Company, of Ardmore, Pa., has recently inaugurated an unique school for instructing drivers at its factory, where each purchaser of an Autocar truck may send his driver to secure a complete course in the knowledge of all vital parts of construction and the first rudiments of repairing, shifting of gears, application of brakes and general points on the care and use of the car. T. H. Dwight, an auto expert, delivers daily lectures on the cooling and oiling systems, etc. The object is to make assurance that the driver thoroughly understands his car and helps to protect the general public by eliminating the novice from the steering wheel of the commercial truck.

—Arrangements are being perfected for the Fall run of the Automobile Club of Philadelphia, which is scheduled to take place on Saturday and Sunday, September 17 and 18. The only definite thing known at present concerning the route is that of the distance—approximately 120 miles on each of the two days. The following have signified their intention of participating: Chalmers, Harvey Ringler, driver; Stevens-Duryea, Frank Hitchcock; Pierce-Racine, D. Walter Harper; Stoddard-Dayton, W. W. Randall; Stearns, Mrs. H. B. Ullman; Stanley, Mrs. D. Walter Harper; Buick, Mrs. Edward Wilkie; Jackson, Ira L. Brown; Cadillac, H. R. Shoch; Buick, Edward Wilkie; Buick, Thomas Wilkie; Marmon, Joseph Hudson; Owen, E. R. Jackson; Locomobile, Howard McTurk; Pullman, W. C. Longstreth; Premier, Alan Sheldon; Brush, Charles Kammerer; Interstate, M. Wertheimer; Palmer-Singer, Chas. Miller; Premier, H. E. Grant; Stevens-Duryea, F. W. Eveland; Mitchell, Walter Cran; Elmore, Frank Hardort, Sr.

—The date of the Syracuse *Herald* Sociability Run has been definitely fixed for Saturday, Sept. 24. It is the second annual run promoted by this paper. The route has been determined; Syracuse to Camillus, to Elbridge, to Auburn, Owasco, thence to west shore of Skaneateles Lake, Skaneateles Village, Marcellus, Camillus, Syracuse, in all 75 miles. The run is through a beautiful region, and the start will be made at 1:30 P. M. and the run will be finished about 5 o'clock. The secret time allowance will be placed in the hands of Mayor Edward Schoeneck. The winner will receive the *Herald* solid silver trophy, valued at $100. Like all the other prizes, this will be for permanent ownership. The Syracuse Automobile Dealers' Association will give the second prize, a silver cup valued at $50. The other prizes, all donated by the *Herald*, include gold medal to third and silver medal to fourth and gold and silver medals to the second and third women drivers coming closest to the secret time. The Automobile Club of Syracuse donates a silver cup to the woman coming closest to the figure establshed.

New Jersey Only State That Don't Reciprocate

ALBANY, Sept. 3—The Secretary of State announced last night that in conformity with the supplementary opinion rendered to him by Attorney-General O'Malley, the list of States now exempt from registering here under the Callan law is as follows: California, Connecticut, Delaware, Florida, Illinois, Indiana, Iowa, Kentucky, Maryland, Massachusetts, Michigan, Minnesota, Missouri, Maine, Nebraska, New Hampshire, North Carolina, Ohio, Oregon, Pennsylvania, Rhode Island, South Dakota, Utah, Vermont, Virginia, Washington and Wisconsin.

The Province of New Brunswick, Canada, is also exempted under the new law. The other Canadian provinces are not, as they require auto tourists to register.

New Jersey is the only Eastern State now that does not have reciprocal relations with New York's automobile laws.

Overland Wins the U. S. M. Test

PHILADELPHIA, Sept. 3—The Overland car was victorious in the United States Mail automobile efficiency test which started last Monday and continued during the week under the joint direction of the Philadelphia Post Office officials and the Quaker City Motor Club. Each day the cars made the first delivery of mail to Bustleton and Torresdale, near-by suburban points. The primary object of the test was to demonstrate that the mail could be carried more rapidly and reliably, as well as more economically, by this modern method than by the old-time and antiquated system of horse and buggy delivery.

Incidentally, there was competition between the different makes of cars, for which a prize will be given. The complete returns of the run, from August 29 to September 3, inclusive, were announced to-day as follows:

Date	Car	Driver	P. O. Station	Mileage	Start	Fin.	St'ps	Time
8/29	Bergdoll	Vaughan	Torresdale	19 2-10	7.05	8.58	102	1.53
	Maxwell	Smith	Bustleton	18 2-10	7.30	9.37	79	2.07*
8/30	Hudson	Yerger, F.	Torresdale	19 2-10	7.08	8.49	102	1.41
	Oakland	McGee	Bustleton	18 2-10	7.25	9.29	79	2.04
8/31	Overland	Greenwood	Torresdale	19 2-10	7.03	8.38	103	1.35†
	Kline Kar	Morton	Bustleton	18 2-10	7.40	9.15	79	1.35
9/1	Kline Kar	Morton	Torresdale	19 2-10	2.11	4.03	102	1.52
	Pullman	Bitner	Bustleton	18 2-10	7.30	9.10	79	1.40
9/2	Reo	Yerger, I.	Torresdale	19 2-10	7.13	4.40	102	9.27
	Parry	M'Cullough	Bustleton	Failed to report for run				
9/3	Mitchell	Bishop	Torresdale	19 2-10	7.16	8.54	102	1.38‡
	Haynes	LaRoche	Bustleton	18 2-10	7.48	9.26	79	1.38

(*) Five minutes off, blocked at railroad crossing.
(†) Two minutes off, extra stop in Bucks County, off route.
(‡) Four minutes off, extra stop in Bucks County, off route.
Overland wins. Time, 1.33.

Contest Board Awakened to Action

The glaring fault in the present plan of sanctioning meets was called to the attention of Chairman Butler of the Contest Board by THE AUTOMOBILE; it was admitted that the situation is a menace to clean sport, the following notice resulting:

Attention is called to Rule 78 of the 1910 Contest Rules in regard to "Records," which provides that the Contest Board shall pass upon all records and may decline to accept any claim which, in its opinion, would not promote the interests of the sport; that no claim for a record of one mile or under and up to five miles will be considered by the Contest Board unless the same is taken by an automatic electrical or mechanical timing device approved by the Board; that no record will be recognized unless claim for same is made within ten days of its accomplishment, unless the Contest Board consider that the circumstances warrant a delay, and that no claim for record will be considered unless the sworn statements of the referee, chief timer and surveyor of the track or course are presented to the Contest Board.

It should be clearly understood that no performances of one mile or under and up to five miles which are timed by stop watches only will be accepted by the Contest Board or recognized as breaking existing records for such distances.

It is a well recognized fact that in the timing of cars at high speeds the personal equation of the individual watch-holder is too variable a one to permit of the results so obtained being made the basis of award of speed supremacy when the dividing line between existing and new records is narrowed down to a few fifths of a second.

The considerable publicity which has recently been given certain track speed performances timed by stop watches in the hands of individual timers is wholly without official recognition or acceptance.

Silent Knight Patents Gone to Issue

Some of the controversies in relation to the basic character of the Knight patent may now be extended without the reader being wrongly informed. While the general design of the Knight motor as it is used in the British Daimler and certain other foreign cars is quite well understood, the fact remains that the patent has been held as a secret up to a day or two ago.

Middle West News

COLUMBUS LEGISLATING AGAINST OPEN MUFFLERS—OHIO'S ATTORNEY-GENERAL HOLDS THAT JUSTICES OF THE PEACE HAVEN'T FINAL JURISDICTION IN AUTOMOBILE CASES—NEWS OF ALL SORTS

—Frank B. Willis, of the Willis-Holcomb Co., will succeed Frank Staley as manager of the Studebaker Brothers Company of Indianapolis.

—At Washington C. H., Ohio, enterprising citizens have subscribed $50,000 of $75,000 necessary to secure the Pilot Automobile Company for that place.

—The Adams Bros. Company, of Findlay, Ohio, has been formed to build commercial trucks, and a large plant at that place has been leased by the concern. L. A. Adams is president of the company.

—The Columbus Buggy Company, of Columbus, Ohio, has completed its models for gasoline cars for 1911. The company announces eight models, which will include the full line of touring cars, runabouts and landaulets.

—The McLeary Engineering Company, of Toledo, has been incorporated with an authorized capital of $25,000 to manufacture and sell motors for aeroplanes and automobiles and to do a general automobile repairing business.

—Creditors of the Indiana Motor and Manufacturing Company, which makes the Continental "35," have decided that the plant shall remain in operation. The company has its principal offices in Indianapolis and its factory at Franklin.

—The automobile manufacturers of Indianapolis have agreed to test their cars on the Motor Speedway, instead of in the streets and on country roads. At the Speedway a man will be assigned to keep a record of the work of each test car driver.

—Announcement has been made that the recently organized Auto Sales Company, of Indianapolis, has taken over the business of the Auto Motor Company at 23 Kentucky avenue and with it the Fuller, Cutting, Monitor, Jackson, Westcott and Demot agencies.

—The Hudson Sales Company, of Columbus, Ohio, of which Levi R. Smith is manager, has been organized to take the 1911 agency for the Hudson in Central Ohio. The concern has located at 241 North Fourth street, and consists of a partnership of Levi R. Smith and William Gaither.

—The Great Western Automobile Company has announced that it will guarantee its 1911 "40" model against defects for one year from the time of purchase, and has authorized its agents and dealers to sell with that provision.

—An ordinance was introduced in the Columbus, Ohio, City Council by Councilman Ernest M. Baldridge providing that every automobile, motor-cycle or other self-propelled vehicle, excepting automobiles operated by electricity, must be provided with a muffler when operated on the streets of the city in order to make less noise.

—A number of improvements are to be made at the Indianapolis plant of the Premier Motor Manufacturing Co., which has bought considerable property in Georgia street, opposite its present plant. An immense machine shop and several other buildings are to be erected immediately, the contracts for these having been let.

—In an opinion recently handed down by Attorney-General U. G. Denman, of Ohio, to William Brown, Cleveland justice of the peace, it is held that a justice of the peace has not final jurisdiction in a prosecution for violation of the State automobile law unless the accused either pleads guilty or waives the right to trial by jury.

—The Case Motor Car Company, capital $50,000, has been incorporated at New Bremen, Ohio, by J. H. and Edmund Grothaus, J. F. Laufersieck, Otto J. Doesel, Louis Huenke and others. The former plant of the Grothaus-Laufersieck Company will be fitted up for the manufacture of commercial motor trucks.

The Week in Detroit

ORGANIZERS AT WORK UNIONIZING THE AUTOMOBILE FACTORY HANDS—NEW CARS ON THE MARKET—NEW FACTORY AND AGENCY BUILDINGS—TRADE AND PERSONAL NOTES

DETROIT, Sept. 5—Automobile interests are viewing with mixed emotions the operations of six international union organizers who have been working among the various branches of skilled labor in the factories here. While other lines are involved, the automobile industry has been given the most serious consideration by these organizers, who express themselves as gratified at the progress made. For years trades unionism flourished here. Then it fell into decadence, workingmen preferring to go it alone. Then the building trades council was wrecked while fighting the employers, and since that time the open shop has prevailed in most quarters, a man's affiliations with labor bodies not being taken into consideration by employers. The automobile industry has furnished employment to thousands of skilled mechanics. Not less than 50,000 men gain a livelihood from the motor car and allied interests in this city. They receive the highest wages and are content. It is due in no small degree to this happy state of affairs that the industry has grown to such proportions. Whether these conditions are to be disturbed and whether the advent of labor organizers will inject a discordant element, is what is causing employers and the great majority of the workmen themselves to watch developments with more than passing interest. The men working here are Thomas H. Flynn, general organizer for the Federation of Labor; Clarence Dowd, Amalgamated Association of Machinists; L. D. Redding, Amalgamated Association of Meat Cutters and Butcher Workmen; Martin Ludwig, International Metal Polishers; John J. Hynes, Sheet Metal Workers; Harry T. Ajax, Journeymen Tailors.

John N. Anhut, former president of the Anhut Motor Car Co., whose absence from the city at a time when the affairs of the company were in a chaotic condition caused some little gossip until he was finally located in Europe, returned home last week and has been busy with his campaign for renomination for State Senator ever since.

The Faulkner-Blanchard Motor Car Co. has been organized to manufacture the Faulkner-Blanchard "Gunboat Six," designed by Frederick W. Blanchard. M. A. Faulkner is president and manager of the company, which has not as yet decided upon a location.

Detroit's automobile fire engine, which has been in active service for some time, demonstrated its value one day last week when it made a run to Grosse Pointe, a fashionable suburb, in response to a call for help. The distance traversed on the outbound trip was 10 1-4 miles, this being covered in exactly 19 minutes, including one full stop and several slowdowns, demonstrating the value of the engine in the event of reinforcements being required in distant parts of the city.

The E-M-F Company has purchased two acres of additional ground adjoining its plant on Clark avenue, which will enable it to double the size of buildings it will shortly erect at this point.

The big Buick factory in Flint has resumed operations on a conservative basis, and, with several new car and parts factories nearing completion, plans are under way for still further extensions before snow flies.

The Bower Roller Bearing Co., makers of roller bearings for automobiles, railroad cars and all kinds of rolling stock, now located in Dayton, O., will begin work immediately on a large new factory at Goethe avenue and Hart street, plans for which have been prepared by Architect Albert Kahn and Ernest Wilby, associate.

A group of buildings that will double its present capacity is being erected by the Kelsey Wheel Co., 1208-1250 Military avenue. The plant, when the additions now going up are completed, will represent an investment of $200,000, and still further improvements, to cost not less than $100,000, are contemplated.

A building permit has been taken out by the Packard Motor Car Co. for a $10,000 power house, to be used in connection with its foundry and forge shops. The company is also putting in loading tracks at its No. 8 plant, on Bellevue avenue.

The "Suburban Limited," which will be manufactured here by the DeSchaum Motor Car Co., made its appearance on the streets last week and attracted considerable attention. It is a light car, of from 16 to 20 horsepower. All parts are Hecla steel and practically all of them are under the hood. It will sell from $900 to $1,000. The company is composed of 10 Detroit business men, including W. Andrew DeSchaum, designer of the car. They expect to turn out 500 cars next year.

The dedication of the completed portion of the immense new plant the Warren Motor Car Co. is building on Holden avenue, last Thursday night, was a most enjoyable affair. Two orchestras furnished music for dancing, which was participated in by some 300 couples, including employees and their ladies. Postmaster Homer Warren, president of the company, gave a brief talk, in which he thanked the employees for their hearty co-operation.

American Cars for 1911

(*Continued from page* 416.)

pair of gears in mesh at one time, and the means of locking are not only positive, but of such a rugged nature as to assure this positive action for all time.

Passing beyond the question of universal joints at the several necessary points, they being well represented, it is pointed out that the brakes, of which there are two sets, located in large drums in the rear wheels arranged alongside of each other, internally expanding, have large surfaces and a means for expanding the shoes and are such as to give the maximum braking effect. The drums are protected by plates to keep out foreign matter and each pair of brake shoes in each drum is assembled as a unit.

This unit assembling idea obtains throughout the car. The live rear axle with its brake drums, including the torsion tube up to the universal joint, constitute a complete unit; the transmission gear represents a unit; the clutch and its mechanism another unit; the motor and its accessories form a unit, and so on. This unit system is again handled in the form of sub-units so that a proper description of the plant would include the idea that there are units within units.

Forty-inch wheels continue to be features of the Roadster, the Roadster Coupé, the Traveler, the Traveler Special and the Traveler Coupé, the remaining types being equipped with 36-inch wheels. The large wheel tire equipment is uniformly 40x4 front and rear, the cars fitted with the smaller wheels being shod with 36x4 tires on the front pair and 36x5 on the rear. The American standard equipment on the Roadster, Roadster Special, Traveler, Traveler Special and Tourist includes: Top and slip cover, shock absorbers on rear, Continental demountable rims (two spare), Prest-O-Lite tank, spare tire irons, full lamp equipment, horn, tool kit and jack.

There will be a slight change in prices of American cars for 1911. The Limousine, $5,250; Tourist, $4,250; Roadster, $4,250, and Traveler, $4,250, will cost a trifle more than last year, the prices of the Roadster Special, $5,000, and the Traveler Special, $5,000, remaining unchanged. The Roadster Coupé is listed at $5,250; Traveler Coupé, $5,250, and the new Speedster at $5,000.

Indianapolis Races

(Continued from page 387)

Five miles—231 to 300 cubic inches—

26	Marmon	Harroun	2:25.82	4:35.66
15	Falcar	Pierce	2:26.28	4:35.95
16	Falcar	Galnow	2:20.76	4:41.49
22	Marmon	Dawson	2:32.44	4:41.85
37	Great Western	Endicott	2:31.80	4:50.56
34	Cino	Fritsch	2:33.40	4:56.54
24	McFarlan	Clemens	2:39.45	4:58.25
23	McFarlan	Barndollar	2:42.87	5:08.12

Five miles—301 to 450 cubic inches—

9	National	Aitken	2:11.02	4:05.97
10	Marmon	Dawson	2:11.64	4:07.56
18	National	Greiner	2:16.70	4:14.97
11	National	Merz	2:14.30	4:15.37
5	Speedwell	Clemens	2:18.15	4:17.31
15	Falcar	Pierce	2:20.09	4:22.91
16	Falcar	Galnow	2:27.26	4:41.50
29	Midland	Ireland	2:32.74	4:52.54
31	Firestone-Columbus	Frayer	2:38.80	4:59.14

Free-for-all—Ten miles—

			5 Miles	10 Miles
3	Benz	Hearne	3:36.74	7:03.41
7	National	Merz	4:02.17	7:47.05
2	Fiat	De Palma	4:29.07	8:02.52
8	National	Aitken	3:57.22	8:06.12
14	Matheson	Basle	4:18.10	8:24.94

Free-for-all—Handicap, five miles—

No.	Car	Driver	Handicap	Time 5 Miles
6	Cole	Edmunds	.16	5:01.66
14	Matheson	Basle	1.04	5:16.74
24	McFarlan	Clemens	.16	5:20.51
27	Westcott	Knight	1.04	5:23.30
29	Midland	Ireland	.34	5:26.01
25	Parry	Hughes	.34	5:29.35
34	Cino	Fritsch	.34	5:32.88
18	National	Greiner	1.24	5:35.21
37	Great Western	Endicott	.44	5:36.24
33	Cole	Endicott	.16	5:38.94
28	Black Crow	Stinson	.44	5:42.94
11	National	Merz	1.24	5:46.21
19	Herreshoff	Emmons	0	5:48.74
21	Herreshoff	Smith	0	5:50.85
23	McFarlan	Barndollar	.16	6:03.32

Note—The handicaps given are the times at which the cars started, from which the real handicap time may be computed.

Free-For-All, 100 Miles

No.	Car	Driver	Cyl.	Bore	Stroke	10	20	30	40	50	60	70	80	90	100
3	Benz	Hearne	4	6 1-10	8	7:56.23	15:47.28	23:49.75	32:00.67	39:95.67	47:15.10	55:24.94	1:03:21.82	1:11:48.76	1:19:58.09
27	Westcott	Knight	4	4 3-4	5	8:37.09	16:48.21	25:06.79	33:24.09	41:39.76	49:55.75	58:10.55	1:06:23.59	1:14:43.39	1:23:01.52
7	National	Livingstone	4	5	5 11-16	8:05.99	16:05.35	23:58.89	33:54.48	41:34.20	49:16.64	58:40.90	1:06:31.09	1:15:23.89	1:24:50.15
32	Marmon	Harroun	4	4 1-2	5	8:36.65	16:50.47	24:44.25	32:29.85	42:04.91	49:53.61	57:38.29	1:05:20.02	1:15:52.32	1:25:27.60
15	Falcar	Pierce	4	4 1-8	5 1-4	9:17.91	18:02.07	27:28.09	38:32.65	47:20.49	55:58.37	1:04:21.54	1:12:51.78	1:21:20.02	1:27:40.49
16	Falcar	Galnow	4	4 1-8	5 1-4	9:08.72	18:05.54	27:04.11	36:02.92	45:01.48	53:57.96	1:06:30.33	1:15:24.66	1:24:19.30	Out in 39th lap
14	Matheson	Basle	6	4 1-2	5	9:37.80	26:15.94	34:38.57	42:52.31	51:08.80	59:81.25	1:07:57.01	1:16:24.14	1:24:19.30	Out in 38th lap
36	American	Jenkins	4	5 3-4	5 1-2	8:35.94	16:47.80	24:46.87	36:35.03	44:16.70	56:17.41	1:04:17.56	1:12:07.51	1:23:25.96	Out in 38th lap
31	Firestone-Colum.	Frayer	4	4 1-2	5	10:07.94	Out								
10	Marmon	Dawson	4	4 1-2	5	3 laps	6:02.77								
8	National	Aitken	4	5	5 11-16	2 laps	4:10.74								

Remy Grand Brassard, 100 Miles

9	National	Wilcox	4	5	5 11-16	8:30.40	16:49.03	25:37.34	33:33.21	41:23.16	49:31.66	58:05.14	1:06:42.63	1:14:53.30	1:23:03.56
11	National	Merz	4	5	5 11-16	8:42.36	17:03.51	25:29.78	33:43.17	42:01.65	50:18.30	58:33.36	1:06:44.05	1:14:56.24	1:23:12.51
5	Speedwell	Clemens				8:37.20	17:02.68	25:43.80	35:04.85	43:22.92	51:52.56	1:31:00.01	1:08:38.96	1:17:01.10	1:25:11.19
29	Midland	Ireland	4	4 1-2	5	9:29.72	18:42.71	27:45.68	36:54.47	45:58.77	55:02.36	1:04:02.36	1:13:02.60	1:22:04.68	1:31:14.54
24	McFarlan	Clemens	6	3 5-8	4	9:40.35	18:59.39	28:09.94	37:19.14	46:27.68	55:48.56	1:04:50.39	1:13:48.89	1:22:47.11	1:31:42.44
28	Black Crow	Stinson	6	4 5-16	4 7-8	9:40.88	19:00.26	28:10.27	40:04.36	49:11.81	58:08.56	1:07:03.59	1:16:02.97	1:24:59.12	1:35:17.24
23	McFarlan	Barndollar	6	3 5-8	4	12:20.62	21:46.20	31:14.35	40:42.40	50:09.55	59:34.49	1:08:56.89	1:18:22.92	1:27:43.35	Oue in 38th lap
34	Cino	Fritsch	4	4 3-8	5	9:53.93	19:43.54	29:40.43	39:25.44	49:12.54	59:09.75	1:09:10.25	1:19:17.94	1:29:28.21	Out in 37th lap
15	Falcar	Pierce	4	4 1-8	5 1-4	10:27.80	29:35.19	37:52.25	46:11.30	54:26.89	1:02:39.17	1:10:50.81	Out in 31st lap.		
10	Marmon	Dawson	4	4 1-2	5	8:30.84	16:49.56	25:28.07	33:30.61	41:23.70	49:32.55	Out in 25th lap.			
31	Firestone-Colum.	Frayer	4	4 1-2	5	11:59.83	Out								

LABOR DAY SUMMARIES

Five Miles—160 cubic inches and under—

No. Car.	Driver	2½ M.	5 M.
19—Herreshoff	Emmons	3:07.23	6:01.33
21—Herreshoff	Smith	3:07.50	6:01.75
20—Herreshoff	McCormick	3:28.21	Out

Five Miles—161 to 230 cubic inches—

30—Firestone-Columbus	Frayer	2:33.00	4:47.87
33—Cole	Endicott	2:34.16	4:50.41
17—Staver	Kiefer	2:40.77	5:07.48

Five Miles—231 to 300 cubic inches—

26—Marmon	Harroun	2:29.67	4:38.27
15—Falcar	Pierce	2:23.47	4:39.76
16—Falcar	Galnaw	2:30.67	4:45.20
23—McFarlan	Barndollar	2:32.80	4:45.23
24—McFarlan	Clemens	2:37.20	4:54.94
37—Great Western	.....	2:36.87	4:59.87
34—Cino	Fritsch	2:38.02	5:01.27
25—Parry	Hughes	2:58.60	5:15.49
22—Marmon	Dawson	2:33.27	

Five Miles—301 to 450 cubic inches—

9—National	Aitken	2:12.57	4:10.22
10—Marmon	Dawson	2:13.23	4:10.56
18—National	Greiner	2:13.50	4:10.90
4—Marmon	Harroun	2:12.90	4:11.15
5—Speedwell	Clemens	2:17.62	4:17.85
16—Falcar	Galnaw	2:26.22	4:39.68
31—Firestone-Columbus	Frayer	2:26.99	4:42.07
15—Falcar	Pierce	2:25.95	4:51.85
11—National	Merz	2:27.54	
29—Midland	Ireland	2:42:75	

Five Miles—451 to 600 cubic inches—

		5 M.	10 M.
1—Fiat	De Palma	3:29.06	6:48.30
3—Benz	Hearne	3:30.50	6:48.33
32—Marmon	Harroun	4:05.45	7:59.60
7—National	Merz	4:09.70	8:00.37
14—Matheson	Basle	4:20.90	8:25.14
8—National	Aitken	One lap only	

Free-for-all Handicap—Five miles

		Handicaps	
23—McFarlan	Barndollar	.50	5:08.32
30—Firestone-Columbus	Frayer	.40	5:09.65
24—McFarlan	Clemens	.20	5:13.65
6—Cole	Edmunds	.35	5:14.00
25—Parry	Hughes	.40	5:14.30
5—Speedwell	Clemens	.10	5:19.00
33—Cole	Endicott	.40	5:19.35
14—Matheson	Basle	.10	5:19.68
18—National	Greiner	Scratch	5:23.20
11—National	Merz	Scratch	5:28.40
19—Herreshoff	Emmons	.70	5:33.37
16—Falcar	Galnaw	.25	5:35.42
37—Staver	Kiefer	.25	5:37.37
28—Black Crow	Stinson	.35	5:37.90
34—Cino	Fritsch	.35	5:40.93
29—Midland	Ireland	.35	5:41.35
21—Herreshoff	Smith	.70	

Free-for-all Open—Ten miles

9—National	Wilcox	2:12.25	4:09.89
14—Matheson	Basle	2:15.15	4:16.08
11—National	Merz	2:15.62	4:16.54
18—National	Greiner	2:17.95	4:17.68

Free-for-all Open, 50 Miles—

No. Car	10 mi.	20 mi.	30 mi.	40 mi.	50 mi.
3—Benz	7:34.67	15:06.52	22:47.45	30:21.62	38:02.85
32—Marmon	7:43.57	15:07.10	24:23.02	31:56.25	39:32.47
7—National	8:03.90	15:50.13	23:42.52	32:09.40	40:57.09
1—Fiat	7:38.15	16:53.21	24:36.65	33:56.12	41:17.22
9—National	8:03.18	15:49.77	24:51.23	35:11.70	43:19.52
14—Matheson	8:29.47	18:50.20	27:04.22	39:52.27	
27—Westcott	8:30.07	16:51.78	25:11.65	Out in 15th lap	
31—Firsetone-Col. ...	9:51.46				

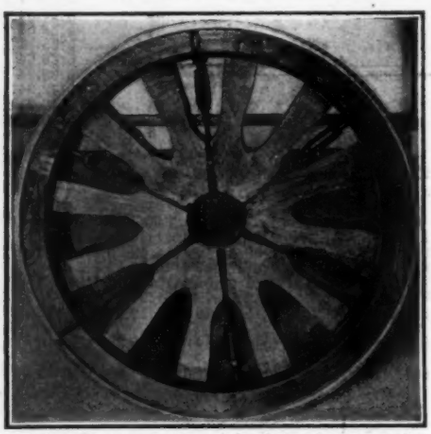
Two Hundred Miles—600 cubic inches piston displacement or less. Minimum weight, 2,300 pounds

No.	Car	Driver	20 mi.	40 mi.	60 mi.	80 mi.	100 mi.	120 mi.	140 mi.	160 mi.	180 mi.	200 mi.
9	National	Aitken	16:46.02	34:41.42	51:15.46	1:07:34.05	1:24.15.49	1:40:03.35	1:56:21.28	2:12:31.24	2:29:01.23	2:47:54.74
7	National	Livingstone	16:57.80	33:45.77	51:42.32	1:09:12.77	1:25:19.22	1:42:46.40	1:59:24.10	2:13:12.80	2:34:21.80	2:53:26.30
23	McFarlan	Barndollar	18:43.93	36:52.05	54:46.00	1:12:37.33	1:30:32.12	1:48:11.80	2:06:00.08	2:19:22.44	2:43:41.10	3:03:29.13
18	National	Greiner	17:03.34	34:08.07	52:30.22	1:09:33.10	1:26:37.69	1:43:24.42	2:00:10.63	2:12:53.67	2:35:15.73	3:05:56.85
24	McFarlan	Clemens	19:06.14	37:50.85	56:38.03	1:19:49.85	1:38:26.80	1:57:03.70	2:16:00.40	2:30:16.00	2:53:50.00	run. at fin.
28	Black Crow	Stimson	19:05.70	37:51.00	1:00:51.29	1:19:26.90	1:39:25.55	1:57:39.30	2:15:59.90	2:36:32.64	Was running on 78th lap at finish of race.	
10	Marmon	Dawson	16:58.17	33:46.10	52:03.65	1:11:22.07	1:27:47.90	1:43:48.80	1:59:47.17	2:20:29.48		
32	Marmon	Harroun	16:45.25	32:02.56	49:20.69	1:08:03.87	1:24:15.50	1:40:05.85	1:56:27.74	2:12:33.95		
5	Speedwell	Clemens	16:52.12	36:40.35	52:45.83	1:12:53.67	1:30:25.00	1:47:15.92	2:03:30.34			
16	Falcar	Galnaw	20:07.72	49:28.92	1:08:05.44	1:26:46.42	1:45:19.77					
14	Matheson	Basle	17:25.00	34:30.75	56:17.37	1:13:33.29	1:30:40.95					
29	Midland	Ireland	19:08.04	38:25.82	57:21.57	1:16:15.15	1:35:42.05					

Prominent Automobile Accessories

THE ADJUSTABLE WEDGE WHEEL

The new Turner adjustable wedge wheel, an English invention, which may now be seen running on General and Vanguard omnibuses in London, is about to



New Turner patent wheel for heavy duty; by means of adjustable wedges it is possible to tighten up the wheel on the road

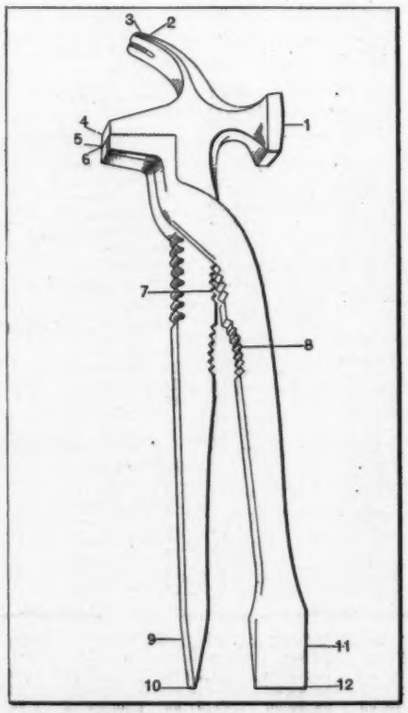
be introduced in this country by Chas. G. Norris, who for the present is to be found at the Engineers' Club, New York. The "staff" photographer of THE AUTOMOBILE photographed one of the new Turner wheels and an illustration of it is given here. Mr. Norris states, in relation to the qualities of this wheel, that "the main idea of this invention was to do away with the unpleasant creaking noise by producing a wheel in which the structural elements could be tightened up from time to time without removing the wheel from its axle, and obviously saving the expense of sending same to the wheelmaker to deal with, which operation is expensive, as under present methods of dealing with a creaking wheel all gearing and tires have to be removed before efficient repairs can be made, to say nothing of loss in running and carriage expenses."

Shocks are spread over the entire wheel, instead of two or three spokes having to take the strains; in this wheel the structural elements are in compression and tension. Further, the soles of the felloes are not burnt and charred, as is the case when steel bands are put on hot. These burnt and charred portions in a wheel, it will be easily understood, are the primary cause of wheels becoming creaky and loose, viz., by the charred portions, together with scales formed on inside of rims, working into powder and escaping from under the rims, thus leaving space for the wheel to start working loose. Of course another great cause of wheels getting loose is the introduction of unseasoned timber, which when exposed to dry weather shrinks up and leaves spaces. When this happens with the present type of wheel there is nothing left to do but rebuild the wheel again. But with the new system of interposing a series of wedges between the wood elements of the wheel it is possible to take up all space so created by simply using a spanner to turn the nuts and couplings, which may be done in a garage, or even on the road by the drivers.

There is no limit to the tightness attainable in this wheel, as is the case when contracting the rims on hot, when 7-8 inch contraction is the most that is obtainable by this method; and, taking into consideration that generally about 3-8 inch on the sole is burnt away and 1-4 inch joint at least should be left to draw up, there is really only 1-4 inch effective tightness in the wheel, to say nothing of the rim being made unserviceable after two or three times of so contracting the same.

A TOOL OF MANY USES

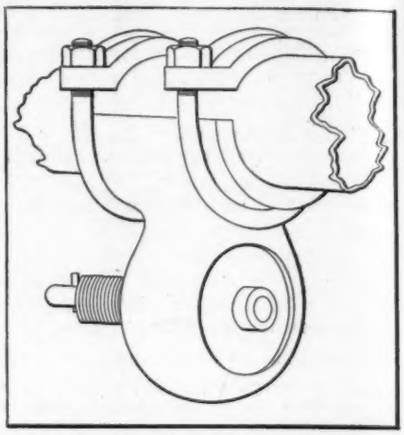
Combination tools, if the autoist is not to clutter up his tool-box with a multiplicity of implements, are highly desirable. In this connection the "Rex," made by the Perfection Tool and Accessory Company, 1777 Broadway, New York City, is the acme of compactness in the varied uses to which a single implement may be put. The illustration shows no less than a dozen different ways in which this handy tool may be used.



New combination tool—can be used as: 1—Hammer; 2—tack puller; 3—valve lifter; 4—riveting mallet; 5—wire-puller; 6—monkey wrench; 7—1-2" pipe wrench; 8—1" pipe wrench; 9—tire iron; 10—screwdriver; 11—tire iron; 12—chisel

EASILY-APPLIED MUFFLER CUT-OUT

In the accompanying illustration is shown the muffler cut-out now being marketed by the S B R Specialty Company, of East Orange, N. J. In applying it all that



A new muffler cut-out which may be easily applied; it is also a carbon-catcher

is necessary is to saw a small piece from the underside of the exhaust pipe and clamp it into position. Once applied it acts not only as a cut-out, but also as a carbon catcher, for it contains a pocket into which most of the residue from the engine falls, this being forced out by the exhaust when the cut-out is opened. To prevent leakage the valve is made to open against the exhaust pipe's pressure.

SINGLE-TUBE FOUR-TONE HORN

A new model of Gabriel Horn, made by the company of the same name at its Cleveland, O., factory, was recently placed on the market. It is styled the No. 4 Four-Toned Horn, and although having but one tube it gives four distinct mellow notes. It is 3 x 32 inches in dimensions, making it very convenient to attach to any style of car. The stock finish is highly polished brass, but on special order the horn will be furnished with oxidized, black lacquer or nickel-plate finish.

TO KEEP THE CAR LOOKING NEW

The owner of a high-priced car can lose the prestige which goes with its ownership by allowing it to become dingy and dirty in appearance. An excellent aid to a continued glossy and new appearance of the body, metal and leather parts is Auto Renew Gloss, manufactured by the Superior Specialty Company, 418 South Third Street, Louisville, Ky. This preparation cleans and polishes at the same time, preserving woodwork, tops and cushions from becoming dry and cracked and acting as a surface-food to the finishing coat. It dries instantly.